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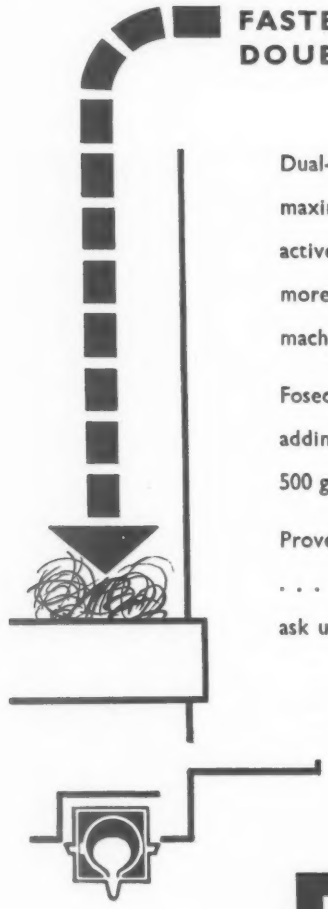

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PRINCIPAL CONTENTS

Page

Cupola Dust and Grit Arresters

By G. E. Lunt

A survey of the types of grit and dust arresters now available to the ironfounding industry 651

UK Ironfounders' Meetings

Common problems of research and production discussed in London .. 661

Producer and Consumer Co-operate

Two American firms co-operate in the production of aluminium castings 667

Installations de Dépoussiérage pour Cubilots. Par G. E. Lunt.
L'auteur passe en revue les types d'appareils dépoussiérieurs maintenant à la disposition de la fonderie 651

Conférence des Fondeurs de Fonte.
Problèmes communs de recherche et de production discutés à Londres 661

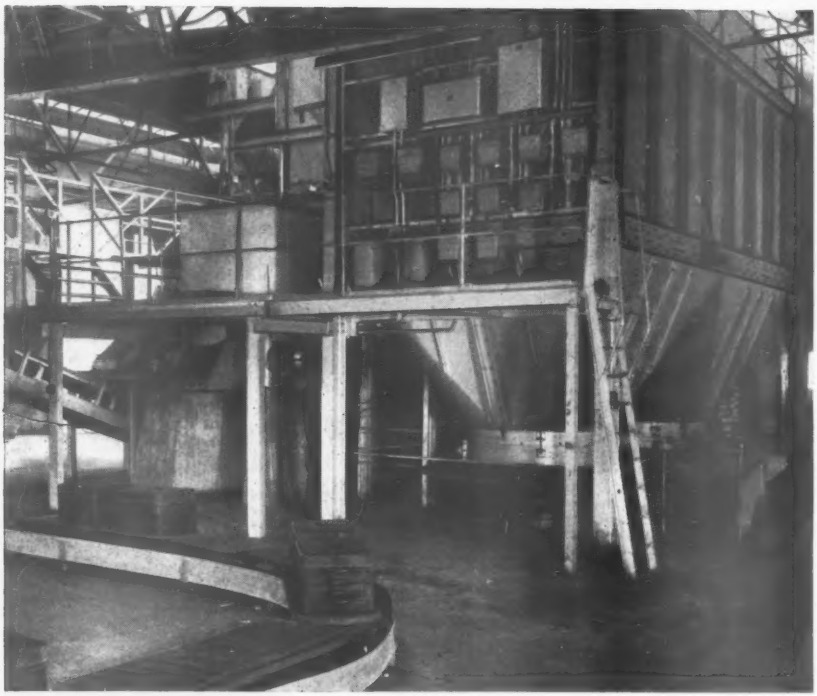
Staubfänger und Staubabscheider für Kupolöfen. Von G. E. Lunt.
Ein Uberblick über die gegenwärtig der Eisengiesserei-industries zur Verfügung stehenden Entstaubungsanlagen 651

Tagung der Eisengiesser.
Gemeinsame Forschungs-und Erzeugungsfragen wurden in London besprochen 661

Features, News, Commercial Information and Statistics

Leader: Rôle of the International Committee of Foundry Technical Associations 649
Correspondence: Notable Stainless-steel Castings 650
Dinner: Association of Light Alloy Refiners and Smelters 650
Engineering and Marine Exhibition 650
Forthcoming Events 650
Forty Years Ago 650
Equipment and Supplies 659
Latest Foundry Statistics 660
Exchanges on Russian and British Steel Research 660
American Letter 665
New Steel Mills for Wales and Scotland 666
News in Brief 668
Company News 670
British and World Shipbuilding 670
Personal 671
Pig-iron and Steel Production 672
Raw Material Markets 674
Current Prices of Iron, Steel and Non-ferrous Metals 676

Foundry efficiency



Photograph published by courtesy of Messrs. Shotton Bros. Ltd. Malleable Ironfoundry.

Sand Preparation Plant by

August's LIMITED

Photograph shows :

Two large storage hoppers with rotary table feeders, supplying reconditioned sand to belt conveyor; to bucket loader (with bifurcated chute) which charges two 2F size August-Simpson Mix-Mullers. Batch capacity of each Mix-Muller is 2,000 lbs. Note the August Mould Conveyor in foreground.

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J.J.M.

FOUNDRY
TRADE JOURNAL
Vol. 105 NOVEMBER 27, 1958 No. 2198

Rôle of the International Committee of Foundry Technical Associations

Now that an increasing number of foundry technical institutes throughout the world are joining the International Committee of Foundry Technical Associations, the time seems appropriate for re-examining what are the objectives of this successful body. It is a *sine qua non* that technology to be efficient must reach the shop floor. That is why many technical institutes organize local branches. The national bodies are in a position to supply high-grade lecturers to talk to these local meetings. The existence of branches also makes possible the organization of works visits in the different areas on a national plane.

The national institutes organize periodic conferences, which provide a platform for discussing technical problems on a broader basis and sometimes they decide that it would be wise to widen this field by inviting technicians from other countries to participate. Moreover, some countries deem it desirable and appropriate to organize exhibitions of foundry materials in order to acquaint their members with the plant and machinery available to help them with their production problems.

In 1926, so many associations were thinking along these lines and were about to organize conventions and exhibitions that clashes would have been inevitable. Thus, a Committee was formed which, in its advisory position, replaced the existing chaos by aiding the various associations to formulate programmes which would avoid clashing. They made some simple rules as to the conduct of international participation, but the last thing in the minds of the Committee was to interfere in any way with the local organization of these meetings. They wanted these gatherings of founders to be essentially national in character, with foreign participation, rather than international meetings held in different countries. The latter type of meeting tends to become stereotyped and to lose its appeal. The provision of a platform for the leading experts in each country to express their views was not envisaged. The International Committee was established to afford patronage and was never meant to assume control. We believe that the best contribution to foundry technology generally, over the years, will result from adherence to the original plan. If the host country can supply the majority of the technical papers presented at its conference, so much the better; a paper from each country represented on the Committee does not *per se* make for either a better programme or one more helpful to the progress of the industry. We do not suggest the elimination of papers from non-host countries, but their inclusion should be at the request of the organizing association. Guidance from the International Committee should be forthcoming only if sought.

Correspondence

NOTABLE STAINLESS-STEEL CASTINGS

To the Editor of the FOUNDRY TRADE JOURNAL.

SIR,—Our attention has been drawn to the photographs appearing on page 386 of your issue of September 25. These photographs show two castings which are claimed to be the largest ever produced in stainless steel, the larger of the two weighing 1,370 lb.

It is possible that the caption should have claimed that these were the largest castings of the particular type involved, and such may be the case, but they are certainly not the largest castings ever produced in stainless steel, and we, in our own foundry here, have produced many castings in stainless steel with weights greatly exceeding those illustrated in the photograph referred to. We hesitate to believe that Firth-Vickers Stainless Steels, Limited, themselves, have not produced stainless-steel castings of a greater weight than the valve body referred to.—Yours, etc.,

S. L. ROBERTON,
Director.

Clyde Alloy Steel Company, Limited,
Craigneuk Works, Motherwell.

Dinner

ASSOCIATION OF LIGHT ALLOY REFINERS AND SMELTERS

The Association of Light Alloy Refiners and Smelters, a new Association which has united Alar and the National Federation of Light Alloy Smelters, held its annual dinner at the Trocadero Restaurant, London, W.1, last Thursday under the chairmanship of Mr. R Hahn. The toasts were proposed by Mr. G. A. Rider, vice-chairman of the Light Metal Founders' Association, and Mr. R. Jolliffe. Amongst the guests were Mr. D. Carter; Mr. J. Golt; Mr. Wilfrid Brown; Mr. L. J. Fletcher; Mr. A. P. Fenn; Mr. W. D. Mendham; Air Commodore W. Helmore; Dr. E. G. West; Mr. H. G. Herrington; Mr. H. R. Murray Shaw; Mr. E. C. Mantle; Mr. R. O. Barnett; Mr. E. Player; Mr. V. C. Faulkner and Mr. D. Chapman. During the evening, making an interval from dancing to the music of Eddie Strevens' orchestra there was a cabaret given by Gwendie—a magician—and Mrs. Colin Welch, an excellent *diseuse*.

Engineering and Marine Exhibition

The Engineering, Marine, Welding and Nuclear Energy Exhibition, traditionally held in the autumn, has been rearranged to open in the spring of 1959. It will occupy the three vast halls of Olympia, London, comprising more than 250.000 sq. ft. of stand space, and already over 500 exhibitors have booked stands. Engineers of every kind, users of diesel engines, operators of welding plant and equipment, and all those concerned with the harnessing of power—particularly nuclear power—should make a note that the Exhibition will be open from April 16 to 30, 1959. The products of ever 60 firms operating foundries will be on show.

Intending visitors from abroad can obtain all information regarding travel and accommodation from the American Express Company, or Thos. Cook & Sons, Limited, the official travel agents to the Exhibition. An interpreter staff will be available for those who require it. Details of the Exhibition itself can be obtained from the organizers, F. W. Bridges & Sons, Limited, Grand Buildings, Trafalgar Square, London, W.C.2.

Forthcoming Events

DECEMBER 1

Association of Bronze & Brass Founders

Yorkshire area: Open meeting for discussion of the Association's publication "Costing a Casting," followed at 12 noon, by a meeting for members, when matters of general interest will be discussed. The venue will be the Victoria Hotel, Bradford.

Institute of British Foundrymen

Sheffield and district branch: "A Modern Foundry for the Manufacture of Small Steel Castings by a New Moulding Technique," by J. H. Osborne, T. A. Marsden and R. F. Horton, 7 p.m., at the College of Commerce and Technology, Pond Street, Sheffield.

DECEMBER 2

Institute of Vitreous Enamellers

Scottish section: "Cast *versus* Sheet Iron for Domestic Appliances," by Mr. Adams, at the Plough Hotel, Stenhousemuir.

DECEMBER 3

Manchester Metallurgical Society

"Metallurgical Control in Mass Production," by J. E. James, 6.30 p.m., in the Manchester Room of the Central Library, Manchester.

DECEMBER 4

Institute of British Foundrymen

London branch: "Continuous Casting of Bronze," by Dr. E. C. Ellwood, 6.30 p.m., at 17, Belgrave Square, S.W.1 (joint meeting with the Institute of Metals).

Stoke-on-Trent section: "Light-alloy Casting Production," by T. A. Williams, 7.30 p.m., in the Stipendiary Court Room, Hanley Town Hall.

Leeds Metallurgical Society

"Thermodynamics in Metallurgy," by J. Lumsden, 7.15 p.m., in Lecture Room C., Chemistry Wing, The University, Leeds.

Chemical Engineering Group

Bristol branch: "Titanium and its Alloys as Materials of Construction for Chemical Plant," by Dr. K. W. J. Bowen, 6 p.m., at the Chemical Department, University of Bristol, Woodland Road.

DECEMBER 5

Institute of British Foundrymen

West Wales section: "Modern Foundry for the Manufacture of Small Steel Castings by a New Moulding Technique," by J. H. Osborne, T. A. Marsden, and R. F. Horton, 7 p.m., Richard Thomas & Baldwins, Limited, Landore, Swansea.

DECEMBER 6

Institute of British Foundrymen

West Riding of Yorkshire branch: Second report of TS 43 on "Modern Cupola Developments," by G. J. Shaw, B.Sc., Ph.D., 6.30 p.m., at the Bradford Institute of Technology.

East Midlands branch: "Spheroidal-graphite-iron Production," by W. R. Cooper, 6 p.m., at the Gas Showrooms, Nottingham.

Wales and Monmouth branch: "Modern Foundry for the Manufacture of Small Steel Castings by a New Moulding Technique," by J. H. Osborne, T. A. Marsden, and R. F. Horton, 6 p.m., at the Newport Technical College.

Lancashire branch: "Production of Medium-size Ingot Moulds," by H. Paton Millar, 3 p.m., at the Midland Hotel, Manchester.

Forty Years Ago

November, 1918, saw the end of World War I and the leading article of the JOURNAL for that month naturally dealt with the immediate prospect for industry. Fuel economy was stressed and in this connection, the use of powdered fuel was suggested—oil was not then "in the picture." Professor Turner in a discussion referred to the world shortage of what would now be called technologists. Other topics touched on in this issue were the use of zirconia and the deoxidizidation of copper with boron. Amongst "new companies" announced were Fellows & Darby, Limited, and the Midland Saw & Tool Company.

Cupola Grit and Dust Arresters

*By G. E. Lunt**

The Clean Air Act, 1956, requires all foundries to take "reasonably practicable" measures to prevent the emission of dark smoke, grit and dust from furnaces to the external atmosphere. This paper is a survey of representative types of cupola grit and spark arresters, both wet and dry, available to the ironfounding industry at the present time. Price ranges for both types of arrester are broadly indicated in this paper. In dealing with the wet type of arrester, the writer briefly considers water systems, water consumption, the associated corrosion and abrasion problems, and finally settling tanks, sludge removal, and water circulating pumps.

This paper is intended as a brief survey of the principal types of cupola spark arresters available commercially in this country, and is based on information supplied by six of the principal manufacturers of this type of equipment. Approximate installation costs of wet and dry type of arresters are given for two common sizes of cupola, and in the case of wet arresters, costs are given for associated pipework, settling tanks and make-up water.

Until recently, cupola spark arresters were not of particular interest to the foundryman. They increase the cost of castings without in any way improving their quality, and the only tangible return for the capital invested is a reduction in the maintenance of roof glazing and roof gutters and, of course, improved relations with neighbours, particularly, private householders.

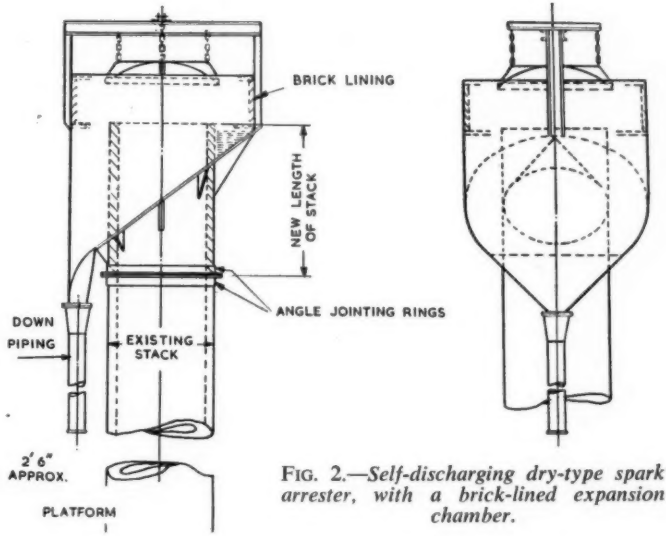

FIG. 2.—*Self-discharging dry-type spark arrester, with a brick-lined expansion chamber.*

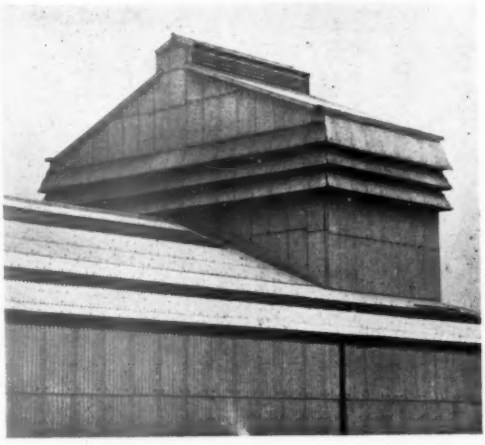

FIG. 1.—*External view of pent-house type of dry spark arrester, at present housing three 4-ton per hr. cupolas.*

Clean Air Act

Necessity for Arresters

With the introduction of the Clean Air Act, it seems likely that some type of arrester will have to be incorporated in both existing and new installations, and adequate maintenance will be required if it is to operate efficiently. Cupola spark arresters are not new, and in certain states of America particularly, regulations have been in force for many

* Mr. Lunt is president of the Foundry Trades' Equipment and Supplies Association, Limited. This paper was presented to the BCIRA/CFA Clean Air Conference held at Ashorne Hill, July 7-8.

FIG. 3 (*above*).—*Typical self-discharging dry-type spark arrester. This particular arrester can be converted to a wet type if required.*

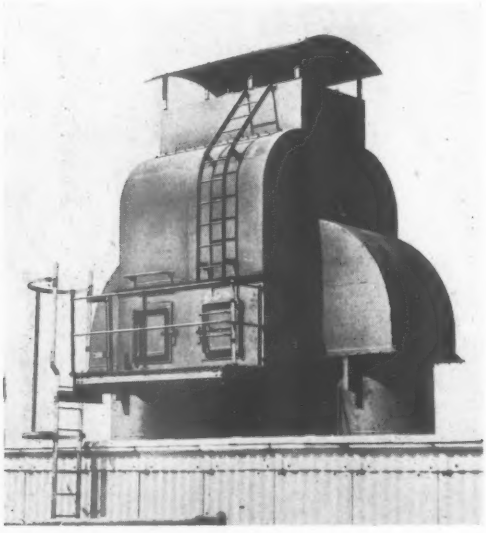

FIG. 4 (*left*).—*A more elaborate design, the box-type dry spark arrester.*

FIG. 5.—*Tops of three E.G. Patent Spark Arresters fitted to two* 3*-ton per hr., and one* 8*-ton per hr., cupolas.*

years governing the emissions from cupolas. At least one American corporation has had more than 25 years' experience with water-cooled spark arresters, which are used extensively in order to comply with the stringent air pollution codes in certain American states.

There are, of course, many foundries in the United Kingdom where cupolas have been fitted with spark arresters for some years, and numerous designs have been developed, some of which are more efficient than others. The last war, with its black-out regulations, compelled many companies to consider installing spark arresters for the first time, while others were fitted to cupolas in densely populated areas long before the introduction of recent legislation. Common practice with large installations was the construction of a pent-house type of structure over the top of the cupola, and this undoubtedly acted as a form of arrester, although its efficiency cannot be rated very highly. More efficient types of dry arresters have been developed and installed for the same purpose, and many of these are still available to-day.

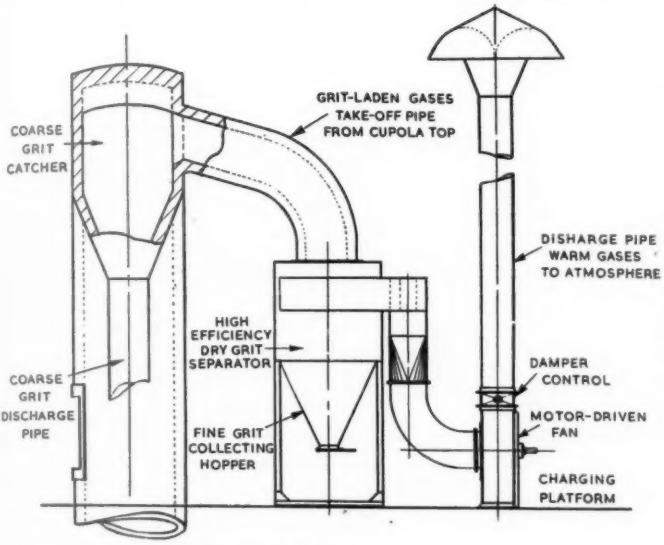

FIG. 6.—*Prototype high-efficiency dry-type arrester, capable of dealing with gases at fairly high temperatures.*

Essential Considerations Before Fitting

Before reviewing the more important types of arresters available, mention should be made of points that must be taken into consideration before a spark arrester is fitted. The arresters described in this paper can weigh anything from four to eight tons and while it is usually safe to assume that most cupola foundations are adequate, the cupola shell, particularly in old installations, should be examined carefully to ensure that the additional weight can be supported. Arresters can be supported from the cupola platform or on separate staging, but this involves additional expenditure. The height of the cupola stack above the charging door sill may need to be increased, since current practice suggests that this distance should be approximately five times the lined stack diameter, or a minimum of 20 ft. This is necessary to obviate any tendency of the cupola gases to blow back through the door, and also gives an opportunity for the secondary air drawn in at the charging door to burn in the stack before reaching the arrester. It will be seen, therefore, that the problem may not be simply that of erecting an arrester on an existing cupola shell. Other modifications may be required with a consequent increase in expenditure.

Wherever possible in this survey, typical installation costs, based on figures kindly supplied by the manufacturers of the equipment, are included, but at the best these can only be very approximate since site conditions can vary so much from one works to another. Where erection charges are included, it is on the assumption that no modifications are required to the cupola, and that a clear straightforward site is available. Statistics have been confined to two popular sizes of cupolas, namely, 36-in. and 48-in. lined diameters, and the figures quoted are for twin cupola installations.

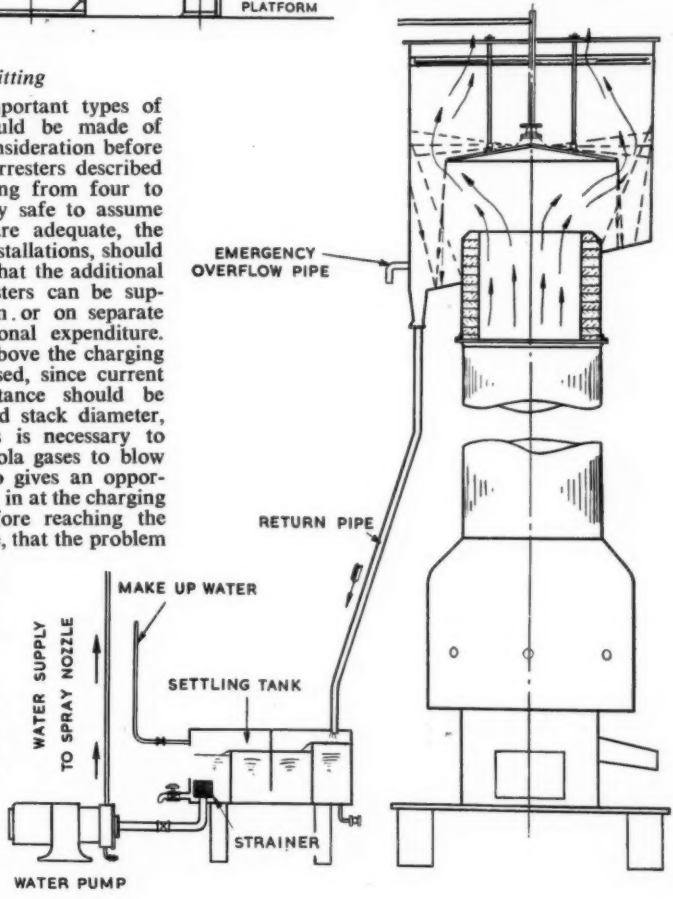

FIG. 7.—*Schematic lay-out of a typical wet arrester system.*

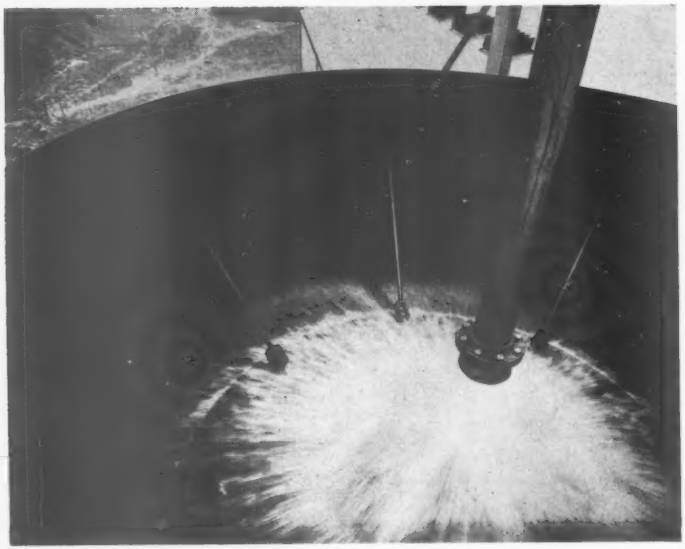

FIG. 8.—*Central mild-steel baffle and water spray of a typical wet-type spark arrester.*

Dry-type Arresters

The pent-house type of arrester (Fig. 1) is steel-framed and asbestos-clad. Corrugated iron sheeting or aluminium sheeting have also been used with considerable success. The example in Fig 1 houses three four-ton per hr. cupolas, and providing this type of arrester is of adequate size it will undoubtedly collect the heavier particles of dust. Quite often some form of chute is provided, down which the grit and dust can be discharged to ground level. Due to the size of the structure, the pent-house type is likely to be expensive, but maintenance costs are reasonably low.

The commonest arrester in this country for many years has probably been the self-discharging dry-type arrester shown diagrammatically in Fig. 2. This consists of a brick-lined expansion chamber with a suitable baffle (usually refractory-lined) over the top of the stack to deflect the heavier particles of grit. The chamber is so shaped that the particles collected will discharge down the chute at the side of the furnace. A typical arrester of this kind is illustrated in Fig. 3. A similar but more elaborate design of dry arrester is shown in Fig. 4, and this is considered to be more efficient. A number of these box-type arresters are giving satisfactory results in operation and have been approved by local authorities in the past.

Another type of arrester, shown in Fig 5, relies on both the expansion and the cooling of the cupola gases. The arrester comprises a fabricated-steel

FIG. 9.—*Closed-circuit wet spark arrester-system drawing make-up water from a canal.*

KEY:
1. Make-up water filter.
2. Settling tanks.
3. Bleed off to canal.
4. Supply to arresters.
5. Discharge pipes.
6. Gravity return flow to sump.

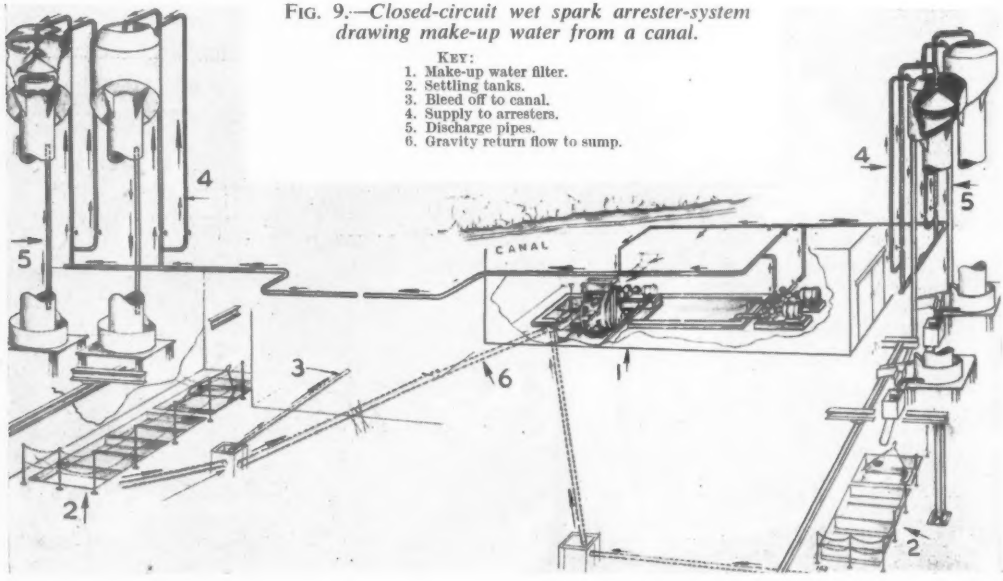

FIG. 10.—*Simple type of settling tank from which sludge must be emptied manually.*

expansion chamber, with a specially shaped deflector-plate fitted over the top. The arrester is not attached to the shell of the cupola but is independently supported, usually on the furnace platform, and is open at the bottom, thus providing an annular space between the arrester and the shell. On entering the arrester, the cupola gases expand and lose velocity, and the heavier grit and dust particles fall through the opening at the base of the arrester and collect in a trough fitted beneath. The air that passes through at the base of the arrester cools the cupola gases, and in most cases eliminates the necessity for a brick lining in the arrester. In

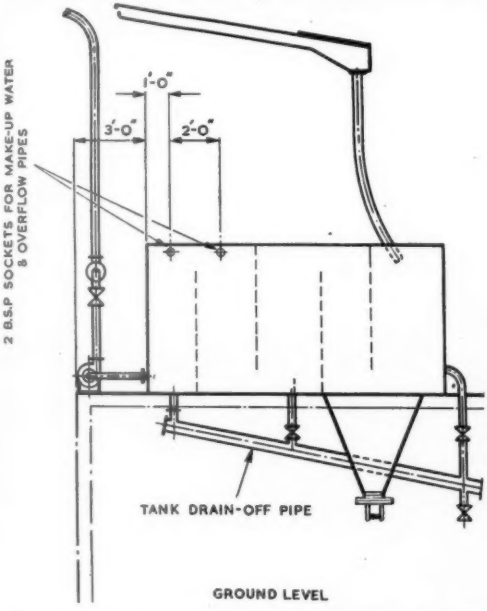

FIG. 11.—*Raised settling-tank from which sludge can be discharged from the hopper-shaped bottom.*

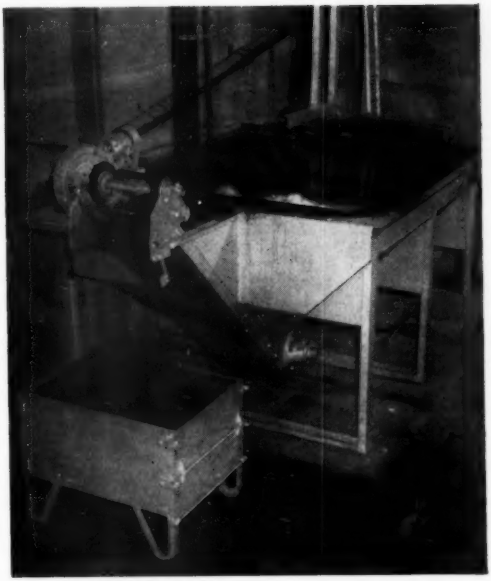

FIG. 12.—*Settling tanks equipped with automatic sludge-removal conveyor.*

FIG. 13.—*Stainless-steel pumps feeding wet arrester from suction compartment of* 1,500 *gall. settling-tank.*

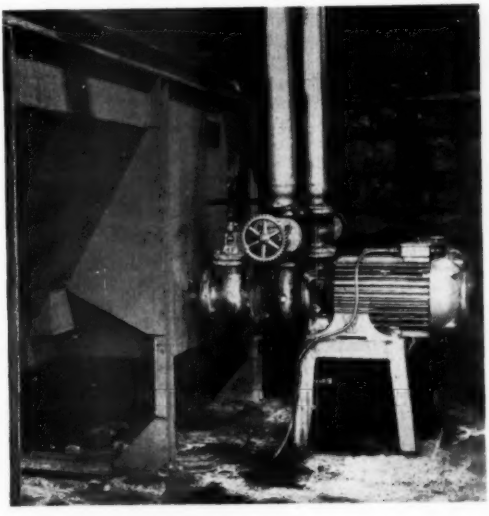

FIG. 14.—*Wet spark arrester-installation fitted to two 10-ton per hr. cupolas.*

special circumstances, however, it may be necessary to use a refractory lining if the cupola is operating under conditions causing excessive emissions of flame. At least two manufacturers can offer a dry-type arrester of a design that can be quickly converted to a wet type with a minimum of expenditure.

Arrester Plus Separator

A more elaborate and efficient prototype dry arrester has been designed by one manufacturer, incorporating a high-efficiency separator capable of dealing with gases at fairly high temperatures (Fig. 6). In this arrangement the top of the cupola is closed in and initial collection of the heavier grit particles takes place in the first chamber in a similar manner to a conventional dry arrester. The cupola gases and finer particles are drawn off by an exhaust fan through the separator and finally discharged to atmosphere. The maker suggests that this may provide a satisfactory alternative to the wet-type collector with the advantage of lower maintenance and running costs.

Cost of Dry Arresters

Table 1 gives an indication of the price range of dry arresters other than the pent-house type, which varies so much in size that any figures given might be misleading. Also excluded is the prototype arrester incorporating the separator.

TABLE 1.—*Price Range of Dry Arresters.*

Type of arrester.	Lined diameter of cupola.	
	36 in.	48 in.
Dry self-discharging-type arrester ..	£900–£975	£1,200–£1,700
Combined box-type dry arrester ..	£1,600 approx.	£1,950 approx.

NOTE.—Twin cupola installation, erection charges not included in prices shown.

Wet-type Arresters

While wet-type arresters have been in operation in America for over 25 years, it is only in the last 4 to 5 years that British companies have begun to manufacture them in any quantity for use in this country. The wet-type arrester is undoubtedly more efficient than the self-discharging dry type, to which it bears a striking resemblance. The various types of wet arresters available are very similar in basic design and Fig. 7 shows the lay-out and principle of a typical wet arrester installation. It consists of an expansion chamber and a water spray above a cone or dome-shaped baffle. The water spray protects both the collector and the baffle from the hot cupola gases, which are washed as they pass through the water curtain falling from the baffle. The grit and dust particles pass down the discharge pipe into the settling tank, from which the water is recircu-

FIG. 15.—*Recently-installed wet-type spark arrester showing the water and grit discharge-pipe, and the overflow pipe.*

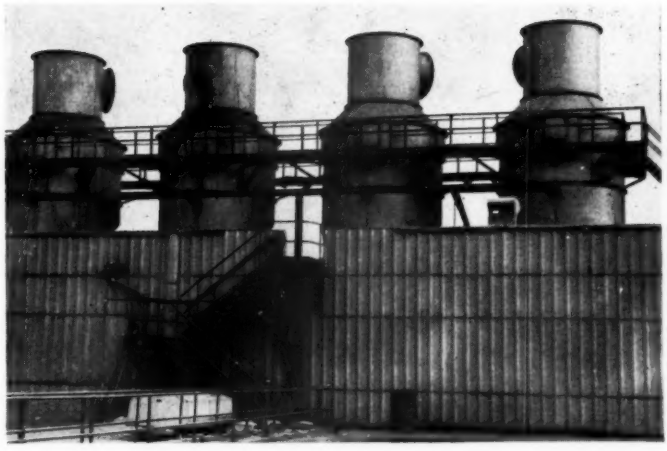

FIG. 16.—*Four wet-type spark arresters with access landing, fitted to cupolas in one of Britain's largest foundries.*

lated through the system. An emergency overflow is provided in the arrester in case the main outlet becomes choked.

The collector itself is usually of welded construction in heavy-gauge steel plate, and the baffle is in most cases mild steel, although one manufacturer advocates the use of stainless-steel. The water sprays naturally vary from one manufacturer to another, but a typical example is shown in Fig. 8.

Water Systems

In most installations, steel tubing is used to convey the water from the pumps to the arrester, although one maker has used galvanized tubing. The return water may be similarly piped, although open wooden troughs, rubber hose and alloy cast-iron pipes have all been used in various designs to combat corrosion and abrasion problems.

Wet collectors can be installed with a recirculating or a non-recirculating water system. It is believed that most manufacturers would recommend foundries to instal the non-recirculating system if it is possible to obtain adequate water supplies at an economic cost from an adjoining river, canal or similar source. This method avoids the necessity of combating the corrosion and abrasion problems which invariably arise in a recirculating type of system. As there are invariably strict regulations governing the disposal of trade effluent, it is of course necessary to instal suitable settling tanks. A typical installation is shown in Fig. 9, where the water is being obtained from an adjoining canal.

Corrosion and Abrasion

The corrosion and abrasion problems referred to can be serious and require careful consideration, in the design of the plant. Abrasion is minimized by efficient separation of the grit and dust particles from the water in a suitable settling tank. Corrosion can be controlled by the use of various inhibitors or neutralizers. Practices vary, but the two most usual materials used to control the acidity of the water are sodium carbonate (soda ash) and caustic soda. Both these materials have disadvantages, particularly in a plant that is running continuously. Comparatively large quantites are required, the water must be treated at regular intervals, and these neutralizers have the added disadvantage of increasing the amount of fine sludge.

Very recently, attention has been drawn to a number of proprietary inhibitors, and it is known that some plants are using them with considerable success. Some of the material is in powder form and can be used as such, or alternatively, mixed into

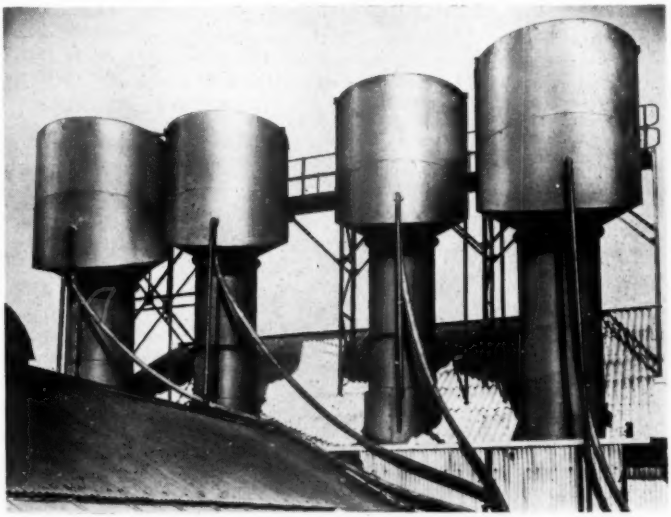

FIG. 17.—*Wet-type spark arresters fitted with flexible rubber hose for the discharge pipes.*

FIG. 18.—*Two wet-type spark arresters, fitted to 5-ton per hr. cupolas, showing access platform.*

a liquid and drip-fed into the settling tanks. Failure to control the acidity of water in closed systems will cause serious corrosion of pumps and pipelines. Automatic acidity-control equipment can be fitted at a cost in the region of about £350.

Settling Tanks

Settling tanks supplied by the manufacturers can be either of the type that are emptied manually at appropriate intervals, according to the operational hours of the cupola, or alternatively of the self-emptying type equipped with a sludge conveyor. A tank of simple design from which the sludge must be shovelled out manually at suitable intervals, is shown in Fig. 10. This type is usually supplied only for use with spark arresters on the smaller sizes of cupolas.

A simple arrangement for sludge removal is shown in Fig. 11. The tank is raised above ground level and its bottom is hopper-shaped to facilitate emptying the sludge into a suitable container for disposal. A tank fitted with automatic sludge-removal conveyors is shown in Fig 12. This type of sludge-removal equipment is generally specified for larger installations.

With manually-emptied settling tanks, the necessity to clean out the sludge at regular intervals cannot be stressed too strongly, since a build-up in the tank rapidly impairs the efficiency of settlement. In closed systems it is advisable to change the water at fairly frequent intervals to prolong the life of the settling tanks, or alternatively to provide adequate pH control.

Water Circulating Pumps

The service conditions must be taken into consideration in choosing the type of pump, of appropriate capacity, for the installation. Pumps with both cast-iron and bronze impellers are in use, although the tendency nowadays is to concentrate on either cast-iron or stainless-steel pumps in order to combat any corrosion or abrasion (Fig 13). It is strongly recommended that provision should be made for a stand-by pump on plants that are operating continuously.

Water Consumption

In both recirculating and non-recirculating systems, water is lost due to evaporation, spillage, and also in the sludge that is automatically removed from settling tanks. In some of the large plants in operation in this country, the losses can be as high as 1,000 gallons of water per hour, costing usually somewhere in the region of 1s. 9d. to 2s. 3d. per 1,000 gallons. Some manufacturers advocate the introduction of fresh water regardless of normal losses, in order to maintain a certain temperature in the recirculating system. Make-up water required on a 36-in. lined diameter cupola installation would probably be of the order of 250 to 300 gallons per hour.

Cost of Wet Arresters

There can be a considerable variation in the cost of wet-type arresters, depending upon whether automatic acidity-control, automatic sludge-removal, or any of the many other refinements are included. However, Table 2 does give a range of prices, the cheapest being the simplest design, and the most expensive the arrester fully equipped with the various devices which have been described.

Wet-type spark arresters, typical of modern practice, installed in some of the larger foundries in this country are illustrated in Figs. 14 to 18 inclusive.

TABLE 2.—*Price Range of Wet Arresters (including erection costs).*

Wet-type arresters including:	Lined diameter of cupola.	
	36 in.	48 in.
1 pump Piping Manual-type settling tank	£1,750 to £2,250	£2,175 to £2,900
2 pumps Piping Self-emptying settling tank Access platforms Acidity-control equipment	£2,550 to £3,400	£3,500 to £5,000

NOTE.—Twin cupola installation, clear site.

Other Types of Equipment

There are several other types of dust-suppression equipment which can be fitted to cupolas, *e.g.*, electro-static precipitators, bag-filter installations, and wet scrubbers. All these types of equipment are elaborate and would be very expensive to instal on a cold-blast cupola. They may, however, be of interest in dealing with the metallurgical fume problem arising from hot-blast cupolas, but they cannot be considered as "reasonably practicable"

(*Continued on page* 660)

Equipment & Supplies

Coating-thickness Measuring Device

East Lancashire Chemical Company, Limited, have introduced the Elcotector, an instrument designed to measure, in a non-destructive manner, all types of coating thicknesses on components. In addition it is also capable of measuring the thickness of most metallic and non-metallic foils, both in the static and moving state. The "boundary" limit of maximum-thickness measurement for all metal coatings or foils, dependent upon the metal resistivity, is: copper foil, 0.010 in.: brass foil, 0.020 in., and aluminium foil, 0.020 in.

Construction

The unit is housed in a stove-enamel hammered-finish aluminium desk-type cabinet, size approximately 12 by 8 by 8 in., with chrome-plated carrying handle. Mains supply to three-pin plug and socket at the rear of the cabinet. All components used are of the best quality and are capable of carrying far greater loads than is required in operation, thus ensuring extended life. Special care has been taken in the design of the power pack to give greatest stability, and the circuit is capable of accommodating wide fluctations in mains voltage, due to the self-compensating technique of its design. The loading of the unit is approximately 55 w., and its weight, with lead and probe, is 15 lb.

The coil in the Elcotector is situated in the head of the probe, which is presented to the surface under test. Two types of probe are available—one in the form of a short pencil for general purposes, the other with a short head and angular extension to facilitate use in confined spaces, these two probes being used for portable checking purposes only. For continuous-strip measurement special probes can be supplied, capable of accommodation on any specific machine.

Sensitivity

The sensitivity of the unit varies according to the type of work, and can be adjusted over wide limits. For example, when measuring non-metallic coatings of a steel base, the coarse step adjustment would give ranges as follows: 0-10; 10-25; 25-45; 45-75, and 75-175 thousands of an inch. With the fine adjustment, any intermediate range could be selected. These ranges are read over a scale of 4¼ in. with 50 sub-divisions, so that the sensitivity of the instrument is readily apparent.

Various Uses

Examples of the application of the device are: (1) The measurement of any type of coating, metallic or otherwise (including vitreous enamel), on most metallic bases; (2) comparison of the degree of hardness, (3) differentiation between variations in ferrous contents in steel; (4) measurement of the thickness of non-ferrous foils; (5) differentiation between various types of alloys, and (6) surface-crack detection.

Containers for Bulk Liquids

Marston Excelsior Limited, of Wolverhampton, a subsidiary company of Imperial Chemical Industries, Limited, have introduced "Portolite" flexible containers. Designed to provide simple, lightweight media for the transport and storage of a wide range of liquids, these tanks are made from coated strong-woven fabrics, and are available in a black or white finish. Bulk liquids may be easily conveyed in them by normal road, rail or water transport and on the return journey the empty tank can be rolled up into a small bundle and the full-load space used for other cargo.

FIG. 1.—*"Portolite" flexible container, filled and ready for the road. These tanks are made by Marston Excelsior, Limited, of Wolverhampton.*

The tanks may be strapped on to the flat surface of an open-sided vehicle if necessary (as in Fig. 1), and surge will be reduced to a minimum by ensuring that little or no air is allowed to enter the tank during filling. They are most stable when completely full, but a partly-filled tank may be suitably lashed.

Their flexibility enables them to be used on "unmade" ground, and for storage purposes, and they can be supplied with filling and emptying connections to meet customers' individual needs.

Before filling, the tank should be fully rolled up to expel air, and rolled out only after valves and pipelines have been connected. Filling can then proceed until the tank expands to a given height. The reverse procedure should be followed for emptying. Methods of cleaning the tank depend on the original contents, steam and detergents being quite safe to use. The fabric of which the Portolite tank is constructed depends upon its proposed contents. Liquids catered for include petrols; mineral oils; vegetable oils; water; latex; chemical-salt solutions; alcohols; detergents; molasses; alkaline solutions; ketones; esters; dilute acids and fruit juices. Safety regulations applicable to transport of the various liquids should be observed.

FOR LONG-HAUL, intra-factory movement of loads of up to 3 tons, a compact electric low-lift platform truck is now available from Yale & Towne Manufacturing Company, Limited, Wednesfield, Staffordshire, with 3-speed control, a top speed under load of up to 5 miles per hr. and a comfortable seat for the operator. The truck is a development within the "Worksaver" range; it may be pedestrian-controlled or ridden. Battery capacity is sufficient for continuous operation throughout an 8-hour shift, and various widths and lengths of truck platform can be supplied to suit most applications.

SHELL CHEMICAL COMPANY, LIMITED, announce two additions to their Epikure range of curing agents for Epikote epoxy resins. These are: hexahydrophthalic anhydride, used in heat-cured casting and laminating applications, and sold as Epikure HPA; and Versamid 125 polyamide resin, used primarily in room-temperature casting work, and sold as Epikure V.125.

Plastic Goggles. Wilson, Chirnside & Company, Limited, 9, Midland Road, Wellingborough, are distributing the Universal type of plastic spectacles. Made in two types, they are stated to have been approved by the British Standards Institution, and tests reported on indicate that they are durable and popular with workmen.

Latest Foundry Statistics

Iron Castings: The Iron and Steel Board state that the production of iron castings in the third quarter of 1958 was 742,660 tons. Tables 1 and 2 show the production in the first three quarters of 1957 and 1958 and the production by district in the third quarters.

TABLE 1.—*Quarterly Production of Iron Castings (tons).*

	1957.	1958.
First quarter	961,990	961,150
Second quarter	944,460	887,210
Third quarter	846,600	742,660

TABLE 2.—*Production of Iron Castings, by District.*

District.	Iron castings (tons).	
	Third quarter. 1957.	Third quarter. 1958.
Northern	90,460	69,520
North West	91,470	81,140
Yorkshire	97,100	80,560
East Midlands	159,630	148,730
West Midlands	176,660	159,820
Eastern and Southern Counties	82,770	77,960
Scotland and Northern Ireland	89,750	69,890
Wales and Monmouthshire	58,760	55,040
Total	846,600	742,660

The Joint Iron Council make the following comments on the Iron and Steel Board's statement:—

The performance of the ironfounding industry in any given period, despite the immense technological progress of the post-war years, is always governed by the state of trade among its chief customers—the other basic industries of the country. Thus, easing of activity in the automobile industry, continued trading weaknesses in building and engineering together with further reductions in the output of the steel producers, have all been reflected in the figures for the third quarter of the year. Hence, in that period for 1958, total castings production has fallen more than seasonally. Details of sectional output for the third quarters of 1957/58 are given in Table 3. The statistics relate to both grey- and malleable-iron castings.

TABLE 3.—*Production of Iron Castings, by Sections.*

	Third quarter 1957. (Thou. tons).	Third quarter 1958. (Thou. tons).	Percentage change.
Automobile (including tractors) ..	125.4	117.5	− 6.3
Engineering*	300.6	257.9	−14.2
Building and domestic	123.7	109.4	−11.6
Pressure pipes† and fittings ..	114.3	104.2	− 8.8
Ingot moulds‡	105.6	77.3	−26.8
Railway equipment	77.0	76.4	− 0.8
Total	846.6	742.7	−12.3

* Including machine-tool, textile machinery, electrical, shipbuilding, etc.
† Mainly gas and water.
‡ Mainly for the steel industry.

The third quarter's reduction in the output of castings for the automobile industry follows the period of record output covering the second half of 1957 and the first half of 1958. The engineering section continues to feel the effects of the nation's reduced level of investment in many types of plant and machinery, while in the building sections the effects of continued slack trading conditions in the building industry itself are clearly apparent. A further fall in steel production has had its impact on the demand for ingot moulds, the production of which fell sharply. Little change is shown in the output of railway equipment castings, but pressure-pipe production continues to be relatively low.

Raw Materials

A comparative statement of the ironfounding industry's consumption of its principal raw materials is given in Table 4.

TABLE 4.—*Pig-iron and Scrap Consumption by Foundries.*

—	Third quarter 1957. (Thou. tons.)	Third quarter 1958. (Thou. tons.)	Percentage change.
Pig-iron (including refined iron) ..	493.1	398.4	−19.2
Scrap iron (about half is foundry circulating scrap)	621.8	579.3	− 6.8
Scrap steel	91.6	89.8	− 2.0

Labour

The number employed in the ironfounding industry at the end of September 1958, was 128,200—representing a three per cent. reduction in the labour force from the level of 131,900 obtaining at the end of June and a seven per cent reduction on the figure for the end of September, 1957, which was returned at 137,900.

BARCLAY'S BANK DCO reports that due to the world recession in demand, steel production at the Redcliff (Southern Rhodesia) Works of the Rhodesian Iron & Steel Company, Limited, has been temporarily reduced to 30 per cent. of last year's figure.

Cupola Grit and Dust Arresters

(*Continued from page 658*)

within the meaning of the Act as the financial burden would be too great for the average foundry.

The importance of adequate plant-maintenance has been stressed in this survey, because under the provisions of the Clean Air Act it is not only necessary to provide suitable equipment, but it is an offence if that equipment is not operating at the required standard of efficiency and is therefore causing emissions in contravention of the Act. In particular, lack of attention to detail in the maintenance of wet arresters can seriously impair the efficiency and the life of the plant, and cause a marked rise in running costs. On the other hand a carefully-designed plant, properly maintained, will give years of satisfactory service in continuous operation.

Acknowledgments

Acknowledgments are due to the many individuals who have given the writer the benefit of their experience with spark arresters, and in particular, to the undermentioned members of the Foundry Trades' Equipment and Supplies Association, Limited, for supplying information and illustrations: The Constructional Engineering Company Limited; George Green & Company; The Incandescent Heat Company, Limited; J. W. Jackman & Company, Limited; Prat-Daniel (Stanmore) Limited; E. A. Roper & Company, Limited.

UK Ironfounders' Meetings

Common Problems of Research and Production discussed in London

BRITISH CAST IRON RESEARCH ASSOCIATION

The thirty-eighth annual general meeting of the British Cast Iron Research Association was held on Tuesday, November 4, 1958, at the Connaught Rooms, Great Queen Street, London, W.C.2, with the president, Mr. E. Player, C.B.E., in the chair.

On the proposal of Mr. H. G. HALL, seconded by Mr. R. L. HANDLEY, the minutes of the thirty-seventh annual general meeting, held in London on November 5, 1957, as circulated, were approved and signed.

Report and Accounts

THE PRESIDENT, presenting the report* of the Council of the Association, and the accounts, for the year ended June 30, 1958, said that as these had been circulated, there was no need to give details with regard to figures, therefore he would confine his remarks to the Association's immediate future.

He then said that the building designed to house the work to be done on foundry atmospheres control had been completed, as a building, and was now being occupied. A week or so ago he had had the opportunity to visit Alvechurch and to inspect the building, and so far as he was able to judge it had been well designed in that every advantage was taken of floor space, and it should be a good centre for the work; also it seemed to him that the Association had obtained quite good value for the money.

Heavy Responsibilities

The responsibilities placed on the industry as a result both of the Foundries Regulations, which concerned internal working conditions, and the Clean Air Act, 1956, which concerned the external atmosphere, were heavy and were common to the whole industry. It was therefore right and proper that the Association should undertake the task of advising the industry and of carrying out the work which would enable it to advise the industry on the problems in this field. It was clear that the work could proceed only on a basis of experience and that there was no royal road to success in meeting the conditions laid down by legislation. In some cases, as the result of work done in the past five years, the answers could already be given, but in others the answers must depend on work still to be done, as the Clean Air Act clearly recognized. It was hoped to work harmoniously both with the inspecting authority on the scheduled processes and with the local authorities on the others, in order to obtain practical solutions to serious problems, which would be within the reach of the ordinary foundry.

It might be relevant for him to mention that the Association had published its own literature on foundry atmospheres. The Association was concerning itself with the problem of air pollution; he hoped that the Association would be able to keep in touch with all the developments that were taking place at Stevenage, for the problem was perhaps even more difficult than that of foundry atmospheres.

Cupola Installation

This year the Association hoped to complete the installation of the cupola furnace, to be operated on cold- or hot-blast, with acid- or basic-linings, under a variety of melting conditions, so that the answers to any problem on melting in this universally-used furnace could be obtained. It was a most flexible tool, and in fact it had been designed to cope with a wide variety of problems affecting the industry in general, where practice had to be adapted to suit the product. It was hoped to arrange for those new additions to the Association's facilities to be officially inaugurated in Spring, 1959, during a couple of open days, probably towards the end of May, 1959, about which members would be advised.

New Quinquennium

In mid-1959 a new quinquennium would begin, for which the Association had to arrange a new contract with the Department of Scientific and Industrial Research with respect to its grant. The Council and its advisory committee had been giving earnest consideration to the new application to the DSIR. At their meeting that morning they had discussed various emendations to be submitted to the DSIR with regard to the Association's claims and they hoped to receive full support from the Department.

The conditions operating in industry at the present time were not such as to encourage the Association to ask for a substantially increased income from its members; and yet to bring to fruition the extensions he had mentioned increased expenditure was inevitable. There were certain forward programmes of research and investigation which would demand considerable increase in outlay, and he hoped they would not fail because ultimately the Association could not get the money with which to do the work. The Council had under review various proposals for increasing income, but at this juncture it was felt that there was none sufficiently concrete to put before a meeting of the general membership. But they were not "resting on their oars" with regard to income.

New Laboratory Block

Furthermore, the Council and its advisory committee were extremely anxious that the Association's facilities should be completed by the one remaining major item of capital equipment needed in the foreseeable future. This was the new laboratory block to centralize experimental work, and over-

* Published in the JOURNAL, November 6 issue, p. 567.

come the present congestion in unsuitable rooms, some of which were, in fact, the bedrooms of the small country house which the Association had acquired as its headquarters.

The balance sheet, he continued, looked healthy enough, but when the present commitments for the extensions he had mentioned had been met, to embark on the laboratory block without additional income would reduce reserves to a dangerously low level. The Council had to put its proposals before the DSIR shortly.

Income

The Council's annual report, he felt, could be accepted with moderate satisfaction, but, he hoped, not with complacency, because nothing was more dangerous. With respect to the accounts, in the last financial year the Association's income had reached the record figure of over £200,000. That amount, however, had included one or two non-recurring items, on account of which the budgeted income for the current year was rather less.

As members would know, the director, Dr. J. G. Pearce, C.B.E., who had served the Association so well for so many years, would retire at the end of December. It was hoped to have an opportunity to pay tribute to him personally and to his work on a suitable occasion before he completed his period of office.

The president formally proposed that the report of the Council, duly circulated, and accounts as audited and certified by the Association's auditors, and now before the meeting, showing the position of the Association's affairs as at June 30, 1958, be approved and adopted.

(The resolution was seconded by Mr. N. P. NEWMAN, and carried unanimously.)

Election of Council

Council

Mr. A. E. PEARCE proposed and Mr. R. TAYLOR seconded that: (*a*) the re-election of members of Council retiring automatically under article 29 be dealt with by a single resolution; (*b*) that the following members of Council, retiring automatically under Article 29, and eligible for re-election, be re-elected:—Mr. T. M. Herbert, M.A.; Mr. R. Miles, B.SC., M.I.MECH.E.; Mr. A. E. Peace; Dr. L. B. Pfeil, O.B.E., F.R.S.; Mr. R. C. Shepherd; Mr. J. F. Stanier; Mr. G. S. Steven; Mr. H. J. V. Williams, and Mr. L. F. Wright, and, (*c*), that Mr. W. Brindley be elected a member of Council in accordance with article 25. These proposals were approved.

On behalf of the Association, Mr. A. E. Pearce thanked those listed in the first part of the resolution for their work on its behalf. Of Mr. Brindley, with whom he had worked for many years, he said the members could be sure that he would prove to be a value member of the Council. (This proposition also was unanimously approved.)

President

Mr. M. M. HALLETT, proposing the re-election of Mr. E. Player, C.B.E., as president of the Association in accordance with article 24, recalled that last year, owing to unfortunate nationality regulations, the Association had lost its president, and Mr. Player was good enough to take up that important office. His performance during the year was such that one was sure the members would all wish to re-elect him (hear hear). A good president, of course, must be a captain of industry. Mr. Player was undoubtedly that. He had to fulfil two quite distinct functions. First of all he must be a decorative figurehead; to spare his blushes, Mr. Hallett did not go into that matter. Secondly, and even more important, he must be a power behind the scenes, he must exert considerable influence both inside and outside the Association. As vice-chairman of the Council Mr. Hallett was in a position to know that whenever the Council had had before them important matters to discuss, Mr. Player's views had been sought and had always materially influenced their decisions.

It was a very great pleasure, therefore, formally to propose that Mr. Player be re-elected.

Mr. S. H. RUSSELL (past-president), seconding, said he did not think any who had been associated with the BCIRA would ever forget that its present headquarters were due to the generosity of the late Mr. Pritchard and the directors of the firm with which Mr. Player was associated. It was a very happy coincidence that Mr. Player should be president. It was also a source of considerable encouragement to the Council, for he was naturally interested in the Association's work. It was thus a great pleasure to second the proposal.

Mr. Player was re-elected, with acclamation, and he briefly expressed his appreciation of the members' confidence.

Vice-presidents

On the proposal of Mr. KENNETH MARSHALL, seconded by Mr. G. R. SHOTTON, the following were elected members of Council and vice-presidents of the Association in accordance with article 24: Sir William Scott, O.B.E., M.I.MECH.E., M.I.P.E., J.P.; Sir Henry Spurrier, M.I.M.E., M.I.P.E., and Mr. C. R. Wheeler, C.B.E., and Mr. A. E. Peace, president of the Institute of British Foundrymen, was elected a vice-president in accordance with article 24.

Thanks to Retiring Vice-presidents

Mr. G. H. JOHNSON proposed and Mr. W. J. COLTON seconded, that the warmest thanks of the Association be accorded to the following vice-presidents, who retired in accordance with article 24:—Mr. J. Blakiston, M.I.MECH.E., M.I.PROD.E.; Sir Vincent de Ferranti, M.C.; Mr. Francis D. Ley, J.P., T.D.; Mr. R. Miles, B.SC., M.I.MECH.E., and Mr. W. T. Wren.

Auditors

THE PRESIDENT reported that H. Overton, Salt & Company, chartered accountants, were automatically re-appointed auditors to the Association in accordance with section 159 (2) of the Companies Act, 1948.

Council and Committees and Chairmen

Mr. J. W. GARDOM, expressing the warmest thanks of the meeting to the Council, committees and sub-committees for their work during the year, said he was delighted to do so. He personally attended Council meetings of various bodies, and it involved a lot of hard work as well as travelling. It was remarkable that so many excellent men should sit on the Council of the BCIRA and carry on the work for the Association, which was certainly more difficult than that of any committee that he knew.

The proposal was seconded by Mr. G. W. Nicholls, and the vote of thanks was heartily accorded.

Col. H. H. JACKSON, proposing that the thanks of the meeting be expressed to the Chairman for having presided, said it could not have been better conducted, and it was a great pleasure to offer thanks to Mr. Player.

Mr. R. MILES, seconding, added that there was no doubt Mr. Player had done a magnificent job, and one very much admired the expeditious way in which he had carried through the business of the meeting. (The resolution was carried with enthusiasm.)

Director and Staff

THE PRESIDENT, expressing appreciation of the splendid work of the director and his staff during the past year, said they were the people who really did the Association's work, put forward ideas and met the disappointments; after all, in research work something like three-quarters of the matters that were investigated led to no conclusions. The members thanked them for their enthusiasm for the job and for the successes they had achieved in the search for truth, which was the whole attitude of the Association. They were very good researchers, and the Association owed them a great debt of gratitude. (The resolution was carried, amid applause.) The business of the ordinary general meeting then concluded.

JOINT IRON COUNCIL

The annual convention of the Joint Iron Council was also held at the Connaught Rooms, on the same day, with Mr. N. P. Newman, J.P., the president, in the chair.

Discussing the annual report of the JIC (extracts from which appeared in the FOUNDRY TRADE JOURNAL, November 13), THE PRESIDENT commented that he supposed most, if not all members, were disturbed in varying degrees about the present state of trade in the industry.

MR. KENNETH MARSHALL, director, the Joint Iron Council, said he thought it was the view of the convention that the industry's major troubles at the present time were due to a decline in the fortunes of its best customers, and not so much to a relative loss of ground by the ironfounding industry in comparison with its competitors. With regard to the fortunes of their customers, these were in large part due to the decline in investment, which, he thought, stemmed from two causes. One cause was a deliberate Government policy to seek control of the value of money and so far as that particular policy had been successful, it had resulted in slowing down a number of activities vital to the industry.

He thought also that part of their consumer demand had been taken away, or become relatively less important, due to the effect of changing fashion and trend. But the "bread and butter" of the industry, perhaps 60 or 70 per cent., was essentially derived from the long-term more durable goods which economists treated as capital. There had been a steady slowing-down over the last year or eighteen months in that kind of project. The Joint Iron Council had used every opportunity to impress on the Government the absolute necessity of giving some priority to those sort of schemes which could be undertaken without imposing additional strain on the economy, and which could lead to their resources and those of their sister industry, steel, being more effectively utilized. A recent debate in Parliament showed that the Government was coming over to that point of view. It was essential, he thought, that the Government should now not only release those projects which had been held in cold storage, but take some positive action to initiate major capital projects which would create employment for the investment section of the industry.

Costing

Replying to a question on prices, the president said it would be unwise to reduce prices below an economic level; reducing prices did not necessarily increase the demand. All that one could hope to achieve would be to get a little bit bigger slice of the demand. He referred to his own company, which operates a mechanized plant, and said the most expensive thing that could happen was to have that plant operating at half cock. Overheads rose alarmingly fast as production fell, if the plant slowed down the company would find themselves in the unfortunate position of becoming less and less competitive. So they sought some level where it paid to take business in order to keep the wheels turning without actually making a paper loss.

MR. MALCOLM J. GLENNY, chairman, the Council of Ironfoundry Associations, said that while the JIC had nothing to do with prices, the CFA had had a lot to do with costing. People had to look to their costs and have proper costing; so many firms had not got a proper costing system. That was why in these times there was a tendency to reduce prices without really knowing whether a profit or a loss would be made.

MR. S. H. RUSSELL suggested that since 1936 the industry on the whole had been reasonably prosperous, and during those many years founders had collected in their establishments a number of expenses coming under the general heading of overheads and which were then felt to be absolutely essential. It was not until business reached a critical stage, where the firm was fighting to get a living, that the present generation of management was prepared to look into these costs and

realize that some of them might be unnecessary and could be cut. He thought that the industry had to go through these periods occasionally to reach what might be called a normal level of efficiency. After all, the Government were rather fostering this competitive spirit in an effort to reduce prices. Founders were going through a painful process, and some of them might be forced to the wall. Although that would be a bad thing individually, he believed that as a result the industry as a whole would become more efficient. The really efficient plant was one which was prepared to study costs and could get some clue where the money was going.

Raw Materials

Introducing the passages in the report dealing with iron and steel scrap, the president said what was briefly reported there was that the Board of Trade had granted further freedom to the scrap trade, by permitting the export under licence of limited quantities of iron and steel scrap. That had taken place. There seemed to be an abundance of coal and coke, perhaps not always of the qualities required, but certainly plenty of it.

Mr. Marshall said it might be advisable to bring the meeting up to date on the scrap situation. There appeared to be a hardening of price in the scrap market, bearing in mind that up to a day or so before the convention there was a maximum price. What he was really saying was that the price of scrap had in the last few months dropped below the authorized maximum price. He knew of no instance where the current prices of scrap were above the maximum controlled prices. Joint Iron Council members were eventually affected by whatever arrangements were made by the biggest scrap consumer in the country, namely the steel industry. If the steel industry took the view that by some means or other the price of scrap could be kept at somewhere near the present maximum price level, in his opinion foundrymen were bound to be similarly affected.

The president said it seemed that they had always been striving for stability in one sense; if it were felt that the scrap field could be stabilized, it was in their interests that it should be stable rather than that it should fluctuate wildly. They would remember that when decontrol was mooted they feared the price would rocket up to the Continental level, so that the time for decontrol was well chosen price-wise, but if there were any danger of it rising steeply now, he presumed they would all like the idea that it should be stabilized round the present price.

Clean Air

Speaking on the industry and the Clean Air Act, Mr. Marshall said they had fought a hard battle with the authorities to secure uniform treatment for many member-firms by pressing for a central inspectorate. They were only successful in certain special processes, and there seemed to be some danger at the present time that those processes with which they were particularly concerned would be handed back to the local authorities for administration by reason of a particular section in the Act.

There was a general principle involved here, the view being taken that foundry processes were no more than a variation of the ordinary combustion processes which take place in the average boiler flue. They had always resisted that, and the JIC, which was not a technical body, had had unanimous advice on that matter from its technical panel led by Dr. Pearce. So they proposed to join issue with the authorities on that matter. There was no doubt they would have the support of the Federation of British Industries in taking that view. They (the FBI) were no more anxious than the JIC to see any part of the industrial case chiselled away.

Although they were unsuccessful in securing that there should be uniform treatment under a central inspectorate, they were not without hope that they might get some degree of uniformity of treatment by the major municipal authorities, possibly by some of the larger and more enlightened urban authorities too. With that in mind, they had a big programme of work ahead, and some interesting points had come to them from different areas. He thought they would be wise, since the letter of the law was being invoked against them, to plead the letter of the law in reply. They should be vigilant to advise associations and member-firms not to concede points as a gesture of good will. If they were being asked to do things voluntarily and they conceded them voluntarily, let them by all means get the credit for that, but he did not think they should allow local authorities to abuse their statutory powers to obtain results for which the Act did not provide. Member-firms could help each other by notifying association secretaries, and the JIC in London, as these points came up. The JIC would watch the interests of everybody to see that the Clean Air Act did not become too onerous to the industry.

A more important point was what form of dust arrester was going to be the one specified? Quite clearly, he said, the cost of an ordinary arrester was going to be prohibitive to a number of firms. The alternative was either that they conformed with the Act and perhaps went out of business, or they did not conform with the Act and had a battle with the authorities. That battle had only just been joined, and it was not known what the outcome would be. However, the JIC must be behind individual members who had been asked to carry out this or that, and to spend money out of proportion to the size of their undertaking.

Training and Education

Discussing the section of the report dealing with training and education, the president said they owed a deep debt of gratitude to Mr. KENNETH N. DAVIS, who had acted as the chairman of the CFA training and education committee throughout the year. Mr. Davis referred to the previous

remarks about overheads, and said whilst he was in full agreement, he hoped that all would agree that one of those overheads which must not be cut down was the money spent on training and education.

(The president then spoke about the European Foundry Apprentices' Competition, which was referred to *in extenso* in last week's FOUNDRY TRADE JOURNAL.)

Next, Mr. Marshall touched on the activities of the European Committee. There were, he said, difficulties in international collaboration in whatever sphere was chosen. There were controversies, particularly on the Common Market problem, tariffs, scrap, and raw materials generally, but he felt that such a matter as training—another subject important to them also was that of health—were subjects where they could collaborate with their European partners without that feeling of competition or rivalry which sometimes led to difficulties in committees.

Research

Speaking of research, the president said they had the closest association with the British Cast Iron Research Association, and it was, of course, an unfortunate fact that at a time when the financial demands and expenses of the Association were naturally increasing, the revenue was decreasing, because the recession in the ironfounding industry was leading to less demand for pig-iron and therefore to less levy income. It was a problem exercising the thoughts of the executive of the BCIRA. He had no doubt that at some appropriate time the industry would have to help if it were to keep up the essential research work to the level necessary if they were to keep ahead in technique.

MR. H. J. V. WILLIAMS, chairman of Council, BCIRA, said there really was little to say at the moment because no decision had been arrived at. A great many facts were needed before any proposition could be put before the industry on how to raise the money needed.

MR. S. H. RUSSELL, hon treasurer, BCIRA, said foundrymen generally should not think they were entirely "on the rocks." The problems the Association faced were really problems of capital expenditure. They would find a way through.

MR. A. E. PEACE, president of the Institute of British Foundrymen, thanked the JIC for the grant which it made in 1957-58, following the practice in a number of years past. He referred also to a matter forming a valuable feature of the JIC's numerous activities—the support of a post-graduate research worker at Birmingham University, who was workng for the mould materials committee of the IBF. There would be, he said, a report published next year on this committee's work.

European Committee of Foundry Associations

The president said Mr. Marshall and himself, representing the ironfounding industry, Mr. Robert Barber, representing British steelfounders, Mr. Peter B. Higgins for the Association of Bronze and Brass Founders, and Mr. J. F. Paige for the light-metal founders, recently attended a meeting in Rome, and that they would be reporting on that in due course. He thought it likely that of the actual full meetings of the European Committee, two meetings would take place in Britain in 1961 or 1962.

Concluding the proceedings, the president said how glad he was to be associated with Mr. Malcolm J. Glenny, who had taken over the chairmanship of the CFA, and was dealing with the various problems that arose. He paid tribute also to the support and co-operation of the director, Mr. Kenneth Marshall, and of the JIC and CFA staff. Mr. Glenny associated himself with Mr. Newman's words regarding the director and staff.

American Letter

Light-alloy-castings Statistics

Statistics on light-alloy-casting production in America up to the middle of 1958, indicate that at least a 30 per cent. recession occurred over the six-month period in comparison with the corresponding period in 1957. (See Table 1.)

TABLE 1.—*Despatches of Light-alloy Castings.*

—	Aluminium-alloy castings (tons).	Magnesium-alloy castings (tons).
1956	354,200	16,100
1957	335,700	13,380
Six months, 1957	182,000	7,850
Six months, 1958	129,000	5,600

Secondary aluminium ingots are used to supply most of the casting market, and the production of this material for 1956 and 1957 was as shown in Table 2.

TABLE 2.—*Secondary Aluminium-alloy Production.*

Secondary aluminium ingot.	Production in tons.	
	1956.	1957.
Pure Al	8,450	8,160
Al-Si (Cu 0.6 per cent.)	21,500	21,200
No. 12 and variations	7,340	6,980
Al-Cu alloys (Si max. 1.5 per cent.)	2,340	1,190
No. 319 and variations	35,800	35,600
AXS 679 and variations	91,200	96,500
Al-Si-Cu-Ni alloys	24,900	26,800
Deoxidizing and similar uses	34,000	28,800
Aluminium-base hardeners	8,380	8,050
Al-Mg alloys	2,280	2,590
Al-Zn alloys	6,210	6,140
Al-Si (Cu 0.6 to 2.0 per cent.)	5,910	6,350
Miscellaneous	18,400	14,200
Total	265,800	262,000

A REMODELLED iron foundry at the works of John Hall & Sons (Oldham), Limited, was opened on November 20 by the Mayor of Oldham, Councillor James Bradley. The company, now a subsidiary of Dronsfield Brothers, Limited, has been producing iron castings for almost a century, its trade mark "Unihall" being well-known. The new foundry covers a floor area of 1,780 sq. yd., and is to be fully described in the near future in this JOURNAL.

Smoke, Grit and Dust

At a meeting of the Combustion Engineering Association, Western Region, held at the Park Hotel, Cardiff, on November 19, under the chairmanship of Mr. W. P. C. Ungoed (Steel Company of Wales, Port Talbot), the subjects of smoke abatement and grit- and dust-collecting equipment were discussed. The attendance was mainly of people connected with power plants and steam raising, and the application of the described plant to foundrywork was not specifically dealt with.

At the morning session, Mr. J. Lawrence (of Riley (I.C.) Products, Limited) presented a Paper on "Smoke Abatement." In his opening remarks he stated that smoke was really waste, for it indicated a condition of incomplete combustion in the furnace, whereby valuable elements were lost up the stack instead of being converted into energy in the firebox.

Small users such as churches, schools and lesser industrial units, he said, were rather more prone to laxity of combustion control; the better-organized users were generally larger industrial units. The responsibility to minimize the emission of smoke rested with the occupier of the building in which the furnace is installed, and he was not aware of any expert person on the staff of the local authority who could advise as to the operation of the Clean Air Act in respect of any particular plant. Clean-air authorities would, however, accept mechanical stokers as efficient units for smoke abatement. Such stoker units operated with bituminous coal, there being a scarcity of smokeless fuel throughout the country. Early reaction from fuel users to the Act had been apprehension, Mr. Lawrence added, but a readiness to co-operate now prevailed generally. The price of fuel to-day necessitated economy in its consumption, and correct furnace operation resulted in greater efficiency and economy and less waste in the form of smoke.

In the discussion following, it was suggested by one member that the obvious answer to all the queries raised by the Act was the use of oil fuel, which provided a consistent fuel that could be handled conveniently in clean surroundings. Furthermore there was no residue to remove in the way of ashes, as there was with solid fuel.

(Following a cordial vote of thanks to the speaker the meeting adjourned for luncheon.)

At the afternoon session, Mr. G. Oddy, of James Howden & Company, Limited, presented a paper entitled "Grit- and Dust-Collecting Equipment for the Smaller plant." Here, to illustrate his lecture, Mr. Oddy used a series of lantern slides as well as a model of a unit for grit collection. With the latter he demonstrated grit being extracted and deposited at the bottom of the vessel whilst the clean air or gas escaped upwards through a central tube. The equipment operates within a vessel and extracts grit from flue gases, with the desired result of cleaner air. From a foundry point of view, however, this particular type of equipment—in the opinion of the JOURNAL'S representative attending the meeting—would be of limited interest.

Nevertheless, the paper was received attentively and following some discussion, a vote of thanks was accorded to Mr. Oddy.

Major-General E. P. READMAN, C.B.E., who recently retired from the managing directorship of the English Tool Corporation, Limited, London, W.1, a subsidiary of the English Steel Corporation, Limited, has been elected a director of Amber Chemical Industries, Limited.

New Steel Mills for Wales and Scotland

At long last the pronouncement on the siting of the projected steel-strip mill has been made. In the House of Commons on November 18, the Prime Minister announced that the Government had accepted the conclusion of the Iron and Steel Board that additional capacity for the production of strip-mill products would be required to meet the future needs of the national economy. "It has been decided in principle that this additional capacity should include two major strip-mill projects, each with appropriate steel making and finishing capacity," he said.

The Government has decided, he said, to issue an industrial development certificate for a project to be undertaken by Richard Thomas & Baldwins, Limited, at Newport (Mon). This would represent the first stage of a major expansion of strip-mill production in South Wales.

Its precise nature, timing, and financing were under discussion between the interested parties, including the Company, and the Iron and Steel Board, and it was envisaged that the initial production capacity would be of the order of 500,000 tons for sheet and tinplate. It was not yet possible to give an estimate of the cost.

The board of Colvilles, Limited, had agreed in principle to undertake the other project in association with its new Ravenscraig Works at Motherwell, and its existing works at Gartcosh, both in Lanarkshire. The Government was prepared to grant an industrial development certificate for this purpose.

Glasgow Foundry to Close

Closure early next year of the heavy ironfoundry of Weir Foundries, Limited, Glasgow, has been announced. In a statement the firm said the decision had been reached owing to a serious shortage of orders for castings resulting from changing techniques, and to the increased adoption of alternative materials in the engineering industry. It is understood that about 107 men will be involved in the close-down.

Men at the foundry have been on strike for the past three weeks over the question of redundancy. The management has denied that the strike has had any bearing on its decision.

Introducing the Author

Mr. G. E. LUNT, whose recent paper to the BCIRA/CFA Clean Air Conference appears on pages 651 to 658 of this issue, has just concluded his two-year term as president of the Foundry Trades' Equipment and Supplies Association, having been a member of the Council since 1949. After serving an apprenticeship at Ruston & Hornsby, Limited, and Ruston Bucyrus, Limited, and being in R.E.M.E. during the war, he became manager of the Ministry of Supply silicon-iron factory at Darlaston. He then became works general manager of Bradley & Foster, Limited, and its associate companies in 1949, and was made a director in 1954, and managing director in 1957.

Producer and Consumer Co-operate

A joint endeavour by two American firms, Ford Motor Company, and Reynolds Metals Company, brought together a producer of raw material and a large-volume user of that material. At Reynolds new aluminium-melting plant in Alabama, molten aluminium will be produced and then transferred directly to the nearby new Ford works for making aluminium castings.

REYNOLDS

The production capacity of primary aluminium, by melting foundries of Reynolds Metals Company, at Listerhill, Alabama, will total 141,810 tons per year when expansion plans have been completed. The original foundry is being expanded to increase its capacity by 17,860 tons, and a second foundry now under construction will add a further 89,300 tons to the annual capacity.

Present Facilities

Since the first aluminium ingot was poured on May 18, 1941, 609,820 tons of aluminium have been melted at the original foundry. To man these facilities more than 3,500 local residents are employed, the annual payroll being $10,000,000.

Sheet Rolling Mill

In January, 1941, before any metal had been poured, work was started on a $17,000,000 sheet rolling mill, and a shape and structural mill. The first unit of this plant began operation five months later, and was rolling metal under a temporary tarpaulin cover before the roof was on. Amongst the equipment installed was a four-high rolling mill, which produces aluminium sheet 100 in. wide. This enormous mill had been originally built in America, and was packed in grease and loaded on flatcars awaiting shipment to France when German armies began cracking the Maginot Line. However, a member of the British Purchasing Commission interfered and kept the mill from reaching France, where it would almost certainly have fallen into German hands. The equipment was bought by the Reynolds Company, and installed at Listerhill.

Basic Technique to be Retained

At this original foundry, aluminium was transferred directly, in molten form, from the electrolytic cells or "pots" where the metal is produced, to sheet-mill furnaces. This principle, still being employed at Listerhill, will be used to advantage at the new works. Molten aluminium will be transferred to an adjacent Ford Motor Company casting foundry for immediate use. This technique will make possible substantial cost savings. The new Reynolds plant will employ between 600 and 700 workers, and will have an annual payroll of more than $3,000,000.

FORD

The new aluminium-casting foundry of Ford Motor Company, at Sheffield, Alabama, will be a very important part of the company's $2,825,000,000 postwar expansion programme. With its completion the company personnel employed there will number 12,000; expenditures for payrolls, materials and services in the area will total $250,000,000 annually; and the annual payroll will be almost $60,000,000.

Private Road Connection

Operation of the Ford plant will involve transporting molten aluminium, in specially equipped ladle-trucks, along a private road connecting with the new Reynolds foundry. About 28,576 tons of aluminium a year will be used. The aluminium will be delivered to the hot-metal receiving building, which will contain 10 holding furnaces—with a total capacity of 250 tons—for keeping the metal in molten form. Four additional furnaces will be used for melting metal trimmings.

Casting Method

Molten aluminium will be carried to the casting lines in the manufacturing building by power-driven monorail ladle-cars. The plant will contain five die-casting areas and two areas for permanent-mould casting.

After casting, parts will be trimmed and sent to other Ford works for machining and assembly. When in full production, the plant will produce about 140 tons of aluminium engine, and automatic transmission, parts a day. The aluminium-casting foundry will employ about 800 people and have an annual payroll of about $4,000,000.

Production Details

The aluminium-casting foundry produces 67 different automotive parts, which range in weight from 0.053 lb. to 24 lb. The smallest casting is a throttle-control piece, and the largest an automatic transmission-housing, which is later machined to an approximate weight of 22½ lb. The molten aluminium which is transported to the aluminium-casting foundry in actual fact makes only a small part of the total light-metal parts used in Ford products, many more of which are bought from independent suppliers.

Aluminium is used quite extensively in Ford automobiles. For example, the 1959 Ford "Fairlane 500" contains 68 lb. of aluminium; the new model "Edsel" 57 lb.; the typical "Mercury" 53 lb., and a four-door Lincoln "Premiere" 84 lb.

WEST BROMWICH, Smethwick and District Manufacturers' Association is to present West Bromwich with a silver coffee service to commemorate the 75th anniversary of West Bromwich as a country borough. The presentation was made at West Bromwich Town Hall on November 26.

News in Brief

TAYLOR'S FOUNDRY LIMITED, of Alperton, Middlesex, non-ferrous founders, have doubled their capital, making it £2,000.

Since November 22, the address of the Fire Protection Association has been Garrard House, 31/45, Gresham Street, London, E.C.2 ('phone: MONarch 7412).

THE ANNUAL DINNER/DANCE and general meeting of the National Society of Master Patternmakers is to be held in Blackpool on May 9, 1959, and not at Brighton as previously announced.

DURBAN CORPORATION has ordered a fleet of 25 underfloor-engined single-deck buses valued at over £100,000 from Leyland Motors' subsidiary company in South Africa, Leyland Albion (Africa), Limited.

METROPOLITAN-VICKERS ELECTRICAL COMPANY, LIMITED, announce that the offices now located at 1-3 St. Paul's Churchyard, London, E.C.4, will shortly be moving to 33, Grosvenor Place, London, S.W.1.

THE RADIO HOBBIES EXHIBITION is being held this week at the Royal Horticultural Hall, Old Hall, Vincent Square, London, S.W.1. The exhibition which opened yesterday (Wednesday) will close on Saturday, November 29.

HENRY HARGREAVES & SONS, LIMITED, the Bury (Lancs) ventilating engineers, are to build a new factory in Gordon Street. The new building, which will cover 142,000 sq. ft., is to be used as an engineering workshop.

A TWO-DAY AUCTION SALE of machine-tools, engineers' stores, materials, and office furniture and equipment at Blackness Engineering Works, Dundee, produced excellent prices on November 11, and a total of £78,000 was realized.

A BRONZE BUST of Lord Hives, past-chairman of Rolls-Royce, Limited, Derby, has been placed in the entrance hall of the main works in Nightingale Road, Derby. The bust is the work of Sir Charles Wheeler, president of the Royal Academy.

AT A RECENT meeting of the Council of Exeter University, the receipt was acknowledged of a gift of £20,000 (£4,000 a year for five years) from Imperial Chemical Industries, Limited, towards the cost of the new chemistry and physics building.

THE 87 firms represented by the Birmingham Engineering Centre's collective exhibit in the British Industry Pavilion at the Brussels Exhibition gained a total of 28 awards—three Grand Prix, four Diplomas of Honour, six gold medals, eight silver medals and seven bronze medals.

IT WOULD APPEAR from the provisions of the Weights and Measures Acts of 1889, that it is an offence against the law to sell firewood in quantities greater than 14 lb. except by weight. This was pointed out to members of the Council of the National Society of Master Patternmakers as a few were selling by volume.

JOHN DALGLISH & SONS, LIMITED, textile finishing machinery manufacturers, etc., of Glasgow, has received orders worth $500,000 to supply four large synthetic rubber drying machines to Japan. The contract was placed by Mitsubishi Shoji Kaisha, agent in the US for the Japan Synthetic Rubber Company.

RECENT SHIPMENT to Russia of heat-treatment furnaces manufactured by Birlec, Limited, was the first to be made by the Birmingham firm to the USSR since the war. Before the war Birlec supplied many furnaces to Russia, especially to the tractor works at Tchelyabinsk, a town some five days' rail journey from Moscow.

THE SPORTS AND SOCIAL CLUB of the Plessey Company, Limited, which has 300 members, is being disbanded because of the impending closure of the Rotherham factory. A dance in the New Year will probably be its last big event. Negotiations for the sale of the club's sports pavilion and equipment at Brinsworth are proceeding.

THE LONDON DISTRICT OFFICE of the British Thomson-Houston Company, Limited (manager, Mr. J. L. Dixon), has removed from Crown House, Aldwych, to 33, Grosvenor Place, London, S.W.1 ('phone: BELgravia 7011). The British Thomson-Houston Export Company, Limited (managing director, Mr. E. V. Small) is already established at the new address.

STONE-PLATT INDUSTRIES, LIMITED, through its subsidiary, Platt Bros. & Company, Limited, textile and general engineers, etc., of Oldham, has secured a contract from the Beacon Manufacturing Company, Carolina, for cotton-spinning machinery, comprising 20,000 spindles, to a value of over $800,000. Deliveries will begin early next year.

NEARLY 2,000 EMPLOYEES at the Round Oak Steel Works, Limited, Brierley Hill (Staffs), who were threatened with redundancy only a few weeks ago, are to go back on full-time working. New orders have brought the factory's melting shop back into full production for the first time in months—and also started rumours that another section of the works, closed for some time, may reopen.

SPONSORED BY THE COUNCIL OF INDUSTRIAL DESIGN and one of the first of its kind to be held in this country, a one-day conference on design in engineering was held at the Engineering Centre, Birmingham, on November 12. The conference was attended by an invited audience of senior industrial executives in the Midlands, largely from engineering concerns. Lord Mills, Minister of Power, gave the opening address.

THE FIRST WELDING SCHOOL to be established in Northern Ireland has been opened by British Oxygen Gases, Limited, at its premises in Castlereagh, Belfast. More than 200 enquiries have already been received from students wishing to attend the school, which has accommodation for eight men on oxy-acetylene welding, one on electric arc welding, one on hand-cutting techniques and a further one on machine-cutting techniques.

EXCAVATIONS HAVE STARTED on the extensions to the Llandudno factory of A. E. I. Hotpoint, Limited. The scheme, which it is hoped will be completed by the end of next year, is estimated to cost £500,000. The extensions will cover an area of more than 33,000 sq. ft., and will include new offices on three floors. Existing offices will be turned into production shops. It is expected that the number of employees will be increased from 400 to 1,350.

LAURENCE SCOTT & ELECTROMOTORS, LIMITED, have arranged an exhibition at their Salhouse Road branch works, Norwich, which will provide demonstrations of both a.c. and d.c. equipment under running conditions. A small cinema is available where films describe the principle of operation of many special machines made by the company. The opening of the exhibition coincides with the 75th anniversary of the formation of the company by Mr. W. H. Scott.

GEORGE KENT, LIMITED, of Luton, held a long-service dinner earlier this month, at the Trocadero Restaurant, London. It was attended by over 300 employees with 25 years' service or more. Among the guests were the Mayor of Luton, Alderman Mrs.

F. M. Brash, and Mr. C. W. Salmon of Cory-Wright & Salmon, Limited, the company's agents in New Zealand. Commander P. W. Kent, the company's chairman, presented the certificates.

THE GRIMESTHORPE FOUNDRY of the English Steel Corporation, Limited, was visited recently by 38 members of the Midland region technical discussion group of the British Steel Founders' Association. The visit was preparatory to the showing of the ESC film "Britain's Heaviest Steel Casting," which was followed by a discussion of foundry methods in which ESC production executives participated. The tour also included the Hawke Street planing shop.

LOUGHBOROUGH (LEICS.) TOWN COUNCIL have granted a certificate of exemption for 12 months to Walter W. Coltman & Company (Boilers) Limited, in respect of their coal-fired plate-heating furnace in Great Central-road, as the company cannot at present observe the requirements of the Clean Air Act as regards the emission of smoke. No complaint has been made about smoke from the company's plant but alternative means of firing are being considered and the work required could be carried out within 12 months.

THE LORD SEMPILL PAPER 1959 is to be presented to the Institution of Production Engineers by Lord Douglas of Kirtleside, G.C.B., M.C., D.F.C., chairman of British European Airways, under the title of "The Operator." Lord Douglas will give the paper during the opening session, on April 16, 1959, of the seventh annual conference on problems of aircraft production, promoted by the Southampton section of the Institution, and held at the University of Southampton (by courtesy of the vice-chancellor). The conference theme will be "The Aircraft Industry—A National Asset."

MR. S. P. CHAMBERS, president of the Combustion Engineering Association, told members at their annual conference at Scarborough on November 12, that while they should be proud of the Clean Air Act which aimed at cleaning the air over British cities, it would be wrong to have clean air at all costs. He considered local authorities should try to avoid hostility, particularly from small businesses, by pushing forward a general programme, stage by stage, dealing with the worst cases first. Hard and fast rules, he said, should not be made which prevented small businesses from carrying on their normal occupation.

TOWARDS THE END OF LAST YEAR Leicester, Lovell & Company, Limited, announced that a new range of hardeners had been developed (for use with the company's Epophen epoxide resins) having the advantage that they greatly reduce the toxic and dermatitic hazards usually associated with epoxide resin/hardener combinations. During the six months "trial" period before the announcement was made, no case of skin irritation was reported despite daily use of the hardeners with the epophen resins; and use, since the announcement, in casting, laminating and adhesives applications on an industrial scale has again indicated complete absence of irritation troubles.

THE BOARD OF TRADE have published the Commonwealth Preference Regulations, 1958, which will come into operation on January 1, 1959, simultaneously with the new Brussels Nomenclature tariff, and will replace the current Regulations. The new Regulations reproduce the effect of the old Regulations. They lay down the condition that, in order to qualify for Commonwealth Preference, manufactured goods must have been manufactured in the Commonwealth Preference Area and a minimum proportion of the cost of manufacture must be attributable to work done or materials grown or produced in the area. Cost of manufacture is defined, broadly, as cost of materials, wages, and overheads. The Regulations apply to both protective and revenue duties.

A GROUP APPRENTICE SCHEME to provide small firms with skilled craftsmen and technicians was proving "a great success" said Mr. E. L. Robbins, of the Engineering Industries Association group apprenticeship scheme, in Birmingham on November 14, at a luncheon attended by representatives of firms in Birmingham, the Black Country, Wolverhampton and the Wrekin districts. Since a pilot scheme was started in 1954 the idea had grown Mr. Robbins said, and to-day there were 193 member firms in the scheme which operates 15 groups, six of them in the Midlands. He added that advantages of the scheme were that youths taking part were trained in their own districts, and were able to broaden their experience by working for three or four separate managements.

THE RUBERY OWEN COMPANY, LIMITED, of Darlaston, has announced an accident-prevention scheme, involving cash bonus incentives, which is believed to be the first of its kind in Britain. The winners of the new safety bonus scheme, 94 employees in the contracts division toolroom, each received a £3 bonus on November 14. Their department had been adjudged best in the reduction of accident hazards during the past quarter. Ald. A. G. B. Owen, chairman of the company, presented the department manager with the departmental Accident Prevention Challenge Cup. By the new scheme the works safety committee hopes to reduce accidents caused by the human element by 80 per cent. in factories in the Rubery Owen group. Up to £300 is to be awarded every quarter. The scheme has the full support of the shop stewards.

A STATEMENT issued last week indicated that the engineering firm of Ruston & Hornsby, Limited, are to close down their foundry department at Grantham. It said, "We have found it necessary, in order to meet intense competition, to manufacture all grey-iron castings at our Lincoln works. Arrangements are being made to find employment in Lincoln for as many as possible of the men employed on foundry work at Grantham." Ninety people are employed at the Grantham foundry but it is not known how many will be involved. It is understood that the firm has promised free transport for a time to those who will be transferred to Lincoln, and that the firm will attempt to absorb other workers in the foundry in other departments at Grantham. The future of the men affected is to be discussed by the management and officials of the National Union of Foundry Workers.

PRODUCTION AT THE WEDNESBURY STEEL WORKS of F. H. Lloyd & Company, Limited, has dropped by a third in the last year, said Mr. M. C. Lloyd, assistant managing director, speaking at the annual distribution of apprentice prizes on November 12. He added "we should be able to get through without a reduction in the labour force. It seems we are fairly stable at this point, and I don't think we need fear that the position is going to get alarmingly worse but there is no substantial reason to think it is going to get better quickly." Mr. Lloyd said that although the tonnage level of output had fallen the work content had increased. The company was doing work of greater complexity and greater intricacy, and quality and inspection requirements were increasing all the time. Awards and certificates, numbering 147, were presented the value of prizes being £1,380. Mr. D. B. Benyon, labour manager, said that by 1962, 30 per cent. more boys would be leaving school and the competition for apprenticeships would become keener.

Company News

SIDNEY FLAVEL & COMPANY, LIMITED, gas-appliance manufacturers, of Leamington Spa—A dividend of 7½ per cent. is announced. No dividend was paid last last year.

KEITH BLACKMAN, LIMITED, manufacturers of fans, gas-heating apparatus, etc., of London, N.17—A free scrip issue of one 7 per cent. cumulative £1 second preference share for every four 10s. ordinary shares held is proposed.

W. T. HENLEY'S TELEGRAPH WORKS COMPANY, LIMITED—A special distribution of 3d. per 10s. unit, tax free, is being paid, as foreshadowed at the time of the offer for the shares from Associated Electrical Industries, Limited.

SAGAR-RICHARDS, LIMITED, diecasters and engineers, of Luddendenfoot (Yorks)—The offer to acquire the issued capital of the company by F. Francis & Sons (Holdings), Limited, manufacturers of metal containers, steel drums, etc., of London, S.E.13, has been accepted by 90 per cent. of the shareholders and the offer has now become unconditional.

HOLMAN BROS., LIMITED, mining, quarrying, and pneumatic plant specialists, of Camborne (Cornwall)—Difficult trading conditions, including the reduction in the demand for the group's products from certain overseas countries affected by the fall in base metal prices, together with other factors, resulted in lower group profits and it is unlikely that the results for the year to March 31, 1959, will be as good as those for the previous financial year. The interim of 4 per cent., less tax, has been maintained.

BIRMID INDUSTRIES, LIMITED, holding company for metal manufacturing concerns, of Smethwick (Staffs)—Results for the year to July 31, 1958, would have been appreciably better, states the chairman, the Marquess of Exeter, but that the light-alloy foundries were adversely affected by cancellations from aircraft and aero-engine manufacturers consequent upon the changed defence policy. Group order-books are at a reasonably high level. Modernization schemes are not fully effective so that the company is not yet getting the full advantages planned. Group net profit is £989,731 (£912,727) and the dividend is maintained at 17½ per cent.

Board Changes

COCKBURNS, LIMITED—Lt.-Cmndr. Jack Tinneveld has been appointed to the board.

INDIAN IRON & STEEL COMPANY, LIMITED—Mr. Frederick G. Liversedge has joined the board in place of Mr. T. Leslie Martin, who has resigned.

COLVILLES, LIMITED—Lord Clydesmuir, Mr. J. A. Kilby, and Mr. T. J. Smith have been appointed directors. Mr. D. Ferguson and Mr. E. W. Ferguson have been appointed special directors.

NATIONAL STEEL FOUNDRY (1914), LIMITED—Mr. Peter B. Lake has been appointed commercial director in charge of all sales. Mr. David McLean has been appointed sales manager responsible to Mr. Lake on all sales matters.

DE HAVILLAND ENGINE COMPANY, LIMITED—Prof. A. D. Baxter, chief executive of the company's rocket division and nuclear power group, and Mr. W. F. Shaylor, commercial manager, have been appointed directors with effect from December 1. Mr. Shaylor will become sales director.

British and World Shipbuilding

Lloyd's Returns for September Quarter

Steamships and motorships under construction in Great Britain and Northern Ireland at the end of September totalled 328 ships of 2,299,133 tons gross, an increase of 3,762 tons compared with the previous quarter, states Lloyd's Register of shipbuilding returns relating to merchant ships of 100 tons gross and upwards. Some 50 ships of 298,062 tons were commenced, 74 of 393,793 tons launched and 58 of 301,994 tons completed. The vessels under construction included 69 steamships of 1,150,010 tons and 259 motorships of 1,149,123 tons. In other British Commonwealth countries there were under construction 9 steamships of 84,320 tons and 49 motorships of 96,450 tons. Oil tankers building in Great Britain and Northern Ireland totalled 77 ships of 1,150,571 tons, an increase of 40,581 tons compared with the previous quarter, and representing 50 per cent. of the total tonnage under construction in this country.

Under Construction

Vessels building in the world, excluding China and Russia, numbered 1,563 of 10,205,791 tons compared with 1,651 of 10,133,497 tons in the previous quarter. The total included 302 steamers of 4,854,846 tons and 1,261 motorships of 5,350,945 tons. Construction in hand in the principal districts of Great Britain and Northern Ireland is indicated in Table 1.

The sizes of steamships and motorships (in parentheses) under construction in Great Britain and Northern Ireland included the following:—100 to 500 tons, 4 steam (78 motor); 500 to 1,000 tons, 5 steam (27); 1,000 to 2,000 tons, steam nil (24); 2,000 to 4,000 tons, 1 steam (13); 4,000 to 6,000 tons, 2 steam (24); 6,000 to 8,000 tons, 2 steam (18); 8,000 to 10,000 tons, 5 steam (35); 10,000 to 15,000 tons, 18 steam (36); 15,000 to 20,000 tons, 3 steam (1); 20,000 to 25,000 tons, 14 steam (3); 25,000 to 30,000 tons, 8 steam (nil); 30,000 to 40,000 tons, 5 steam (nil); 40,000 tons and above, 3 steam (nil).

TABLE 1.—*Shipbuilding Construction in Hand in Principal Districts of Great Britain and Northern Ireland.*

District.	September 30,		June 30,		September 30,	
	No.	Gross tonnage.	No.	Gross tonnage.	No.	Gross tonnage.
Aberdeen ..	16	31,206	17	25,761	18	23,142
Barrow ..	3	94,500	3	94,000	4	108,770
Belfast ..	17	305,740	19	337,800	19	291,339
Bristol ..	3	6,200	3	6,200	3	2,160
Clyde—						
Glasgow ..	68	529,475	70	518,302	74	448,854
Greenock ..	30	178,260	29	158,810	30	202,308
Dundee ..	5	40,300	5	35,095	6	38,700
Hartlepool ..	6	44,840	7	53,640	7	54,600
Hull	37	17,182	36	17,267	36	18,884
Leith	11	57,350	11	61,657	11	47,820
Liverpool ..	13	124,719	12	106,202	15	161,340
Middlesbrough	15	187,679	16	201,141	16	208,633
Newcastle-on-Tyne ..	40	414,334	38	382,352	40	401,720
Southampton	8	3,469	9	3,669	6	4,000
Sunderland ..	27	240,056	31	268,380	27	199,249

Of the steam and motor merchant ships under construction throughout the world at the end of September, 5,575,632 tons (54.6 per cent) are under the inspection of Lloyd's Register. Of this total, 2,241,530 tons, representing 97.5 per cent. of the tonnage being built there, are under construction in Great Britain and Northern Ireland; while, of the tonnage being built abroad, 3,334,102 tons (42.2 per cent.) are to be classed with Lloyd's Register.

Personal

Mr. THOMAS D. WALKER has been appointed an additional director of the Saunders Valve Company, Limited.

Mr. JOHN G. WILSON, general sales manager of the Universal Metal Products Company, Limited, Salford, Manchester, has been elected a director.

Mr. H. FLETCHER, traffic foreman at Skinningrove Iron Company, Limited, Saltburn-by-the-Sea (Yorks), has retired after 52 years in the traffic department.

Admiral Sir RALPH A. B. EDWARDS has joined the board of Elliott Brothers (London), Limited, instrument makers and electrical and mechanical engineers. The company is a subsidiary of Elliott-Automation, Limited.

Mr. RALPH C. HEYS, Mr. FRED COUSANS and Mr. GEORGE WOOD have been appointed directors of Hadfields, Limited, as from December 1. Mr. Heys is managing director of Millspaugh, Limited, a subsidiary of Hadfields.

To mark his retirement Mr. W. EDDY, foundry works manager of Head Wrightson Steel Foundries, Limited, Stockton-on-Tees, was presented with a television set by Mr. Richard Miles, chairman of the company, at a ceremony on November 21. Mr. Eddy has spent all the 50 years of his working life with Head Wrightson's.

Mr. FREDERICK CHAMBERLAIN retired on November 14 after 66 years' service with George Salter & Company, Limited, the West Bromwich spring makers, etc. He is 80. His father was with the company for more than 35 years and, on his death in 1904, Mr. Frederick Chamberlain succeeded him as foreman of the dial marking department.

Mr. HAROLD B. RIGGALL, vice-chairman and managing director of Ruston & Hornsby, Ltd., engineers, Lincoln, is in Melbourne, Australia, visiting branches of the firm's Australian company in Sydney, Brisbane and Adelaide. While in Australia he will examine future requirements for gas turbines, diesel locomotives and oil engines for all purposes.

Mr. R. G. MCCOY has been appointed general manager of the de Havilland Aircraft Company, Limited, with effect from December 1. Mr. D. R. NEWMAN has been appointed chief aerodynamicist of the company, also from December 1. Mr. M. HERROD-HEMPSALL remains responsible for administration in the aerodynamics and allied departments.

Sir EWART SMITH, a deputy chairman of Imperial Chemical Industries, Limited, has resigned from the Northern Ireland Development Council. Capt. A. R. S. NUTTING, chairman of the Consolidated Signal Company, Limited, and the Westinghouse Brake & Signal Company, Limited, and a director of many other companies, is one of two new members of the Council.

To mark their retirement from the Park Gate Iron & Steel Company, Limited, Rotherham (Yorks), Mr. ALBERT HALL, Mr. LEONARD HAWKINS, and Mr. WALTER BRADSHAW have received presentations from members of the Rotherham No. 1 branch of the British Iron, Steel, and Kindred Trades Association. Both Mr. Hall, who is 70, and Mr. Hawkins, who is 68, have served the company for 53 years. Mr. Bradshaw (65) has 34 years' service.

Ald. A. PADDON SMITH retired from his directorship with the firm of Joseph Lucas, Limited, on November 21, after 60 years service—a record in the company's history. A luncheon in his honour was held at the Grand Hotel, Birmingham, on the day of his retirement. Aged 77, Ald. Paddon Smith is a former Lord Mayor of Birmingham, and among his many other appointments is that of chairman of the Midland branch of the National Union of Manufacturers.

After nearly 73 years of service Miss ALICE KEETON, at the age of 80, retired from Ley's Malleable Castings Company, Limited, Derby, on November 15. Miss Keeton, who was an office cleaner and had recently been in charge of the firm's office cleaners, has worked for four generations of the Ley family. She started working for the company at the age of seven, and used to get up at 4 a.m. and walk from her home in Gordon Road, Derby, to clock-in at 5 a.m. She was presented with a portable wireless set from the directors, and a dressing gown from the staff.

Two members of the board of Tube Investments, Limited, have attained the age of 70 since the company's last annual meeting, and one of them, Mr. F. W. MARTIN, will not seek re-election at the meeting on December 8. He will, however, continue in his appointments with the subsidiary companies for the time being. Recording "appreciation of his wise counsel and co-operation over the years," the chairman, Sir Ivan A. R. Stedeford, says in his statement to shareholders: "He joined a T.I. Company at the beginning of his business career and rose to the top in the group by hard work and ability." Sir GREVILLE S. MAGINNESS, deputy-chairman (part-time), who has also turned 70, has, on representations from the chairman and his co-directors, indicated his willingness to continue serving the company in his present capacity.

Sir LESLIE ROWAN and Mr. R. P. H. YAPP, who is a director of Vickers-Armstrongs, Limited, have been appointed to the board of Vickers, Limited, as from December 8. Sir Leslie was second secretary of H.M. Treasury on his retirement from the public service and during his career has held such positions as private secretary and principal private secretary to the Prime Minister (1941-47) and Economic Minister in the Embassy at Washington. Vickers announced on July 17 the intention to make this appointment when Sir Leslie retired from the Civil Service. The appointment is as an executive director on a full-time basis. Mr. Yapp is already a special director of Vickers and controller of administration. He is also director of administration. He is also director of administration of Vickers-Armstrongs and a director of its aircraft, engineering, shipbuilding and tractor subsidiaries.

Increases in Capital

MICHELL BEARINGS, LIMITED, Newcastle-upon-Tyne, increased by £50,000, in £1 ordinary shares, beyond the registered capital of £200,000.

STAVELEYS, LIMITED, engineers, etc., of Atherton, increased by £35,000, in £1 ordinary shares, beyond the registered capital of £10,000.

BRITISH PRESSURE DIECASTING, LIMITED, New Barnet (Herts), increased by £150,000, in 5s. ordinary shares, beyond the registered capital of £100,000.

WELLMAN SMITH OWEN ENGINEERING CORPORATION, LIMITED, London, S.W.1, increased by £800,000, in £1 ordinary shares, beyond the registered capital of £800,000.

P.B. SILLIMANITE COMPANY, LIMITED, mining engineers, etc., of London, E.C.2, increased by £90,000, in £1 shares, beyond the registered capital of £30,000.

WALTER SOMERS, LIMITED, metal founders, etc., of Halesowen, Birmingham, increased by £375,000, in 2s. ordinary shares, beyond the registered capital of £375,000.

RYLANDS BROS., LIMITED, wire manufacturers, etc., of Warrington (Lancs), increased by £450,000, in £1 ordinary shares, beyond the registered capital of £1,300,000.

WALLIS & LONGDEN, LIMITED, machine builders, engineers, etc., of Long Eaton, increased by £10,000, in £1 ordinary shares, beyond the registered capital of £15,000.

WESTERN MACHINERY & EQUIPMENT COMPANY, LIMITED, Bittaford, Ivybridge (Devon), increased by £20,000, in £1 ordinary shares, beyond the registered capital of £10,000.

Pig-iron and Steel Production

Statistical Summary of September Returns

The following particulars of pig-iron and steel produced in Great Britain are from statistics issued by the British Iron and Steel Federation. Table 1 summarizes activities during recent months. Table 2 gives production of steel ingots and castings in September. Table 3, weekly average production of finished steel in August. Table 4 gives the production of pig-iron and ferro-alloys in September, and furnaces in blast. (All figures are weekly averages in thousands of tons.)

TABLE 1.—*Iron and Steel Price Index and General Summary of Pig-iron and Steel Production.*

Period.	B.o.T. Price Index, 1938 = 100.			Iron-ore output.	Imported ore used.	Coke sent to blast-furnaces.	Pig-iron, ferro-alloys prod.	Scrap used in steel prod.	Steel (incl. alloy).			
	Iron and steel.	Coal.	Basic materials excl. fuel[1]						Imports.[2]	Prod. ingots, castings.	Delivrs. finished steel.	Stocks.[3]
1956	296	453	542	312	272	264	253	216	27	397	318	1,444
1957	328	488	537	325	303	270	275	220	14	417	322	1,444
1958—May ..	341	497	476	271	266	229	250	202	9	379	295	1,579
June ..	341	497	478	274	258	222	243	201	8	374	303	1,543
July ..	341	498	474	256	235	209	227	165	9	316	236	1,623
Aug.[4]	341	497	475	233	233	203	221	147	9	299	228	1,637
Sept.	341	496	471	271	241	211	231	198	6	369	—	1,620

TABLE 2.—*Average Weekly Production of Steel Ingots and Castings during September*, 1958. (*Thousands of Tons.*)

District.	Open-hearth.		Bessemer.	Electric.	All other.	Total.		Total ingots and castings.
	Acid.	Basic.				Ingots.	Castings.	
Derbys, Leics, Notts, Northants, and Essex ..	—	3.8	12.2 (basic)	1.9	0.1	16.6	1.4	18.0
Lancashire (excl. N.W. Coast), Denbigh, Flints, and Cheshire	2.5	37.2	—	2.4	0.3	41.2	1.2	42.4
Yorkshire (excl. N.E. Coast and Sheffield) ..								
Lincolnshire	—	40.4	—	—	0.1	40.4	0.1	40.5
North-East Coast	0.7	66.4	—	1.2	0.4	67.1	1.6	68.7
Scotland	1.6	33.1	—	2.5	0.1	35.3	2.0	37.3
Staffs, Shropshire, Worcs, and Warwickshire ..	—	12.1	—	2.6	0.8	13.7	1.8	15.5
South Wales and Monmouthshire	2.8	83.7	5.3 (basic)	0.9	0.1	92.3	0.5	92.8
Sheffield (incl. small quantity in Manchester) ..	9.9	28.8	—	9.1	0.3	46.3	1.8	48.1
North-West Coast	—	1.0	3.7 (acid)	0.5	0.1	5.2	0.1	5.3
Total	17.5	306.5	21.2	21.1	2.3	358.1	10.5	368.6
August, 1958[4]	9.4	250.6	21.9	15.7	1.6	291.5	7.7	299.2
September, 1957	21.0	364.1	25.2	25.0	2.9	425.5	12.7	438.2

TABLE 3.—*Production of New Non-alloy and Alloy Finished Steel.*

Product.	1956.	1957.	1957.	1958.	
			August[4]	July	August[4]
Non-alloy steel:					
Ingots, blooms, billets and slabs[5]	4.7	5.0	3.7	3.2	3.1
Heavy rails ..	9.7	11.2	7.5	8.8	6.8
Sleepers	1.1	1.3	0.6	1.1	0.3
Fish and soleplates	0.7	0.8	0.5	1.1	0.5
Plates:					
(i) ⅜ in. thick and over ..	30.3	34.0	31.1	23.6	27.6
(ii) Under ⅜ in.	19.9	20.3	18.6	14.9	15.2
Other heavy prod.	50.3	53.0	45.9	29.9	29.5
Ferro-concrete bars	7.8	8.8	7.9	8.0	6.0
Wire rods	22.9	23.3	22.1	17.9	16.8
Arches, etc. ..	10.1	11.0	10.4	6.5	7.2
Other light sections	41.4	38.8	29.0	22.2	21.4
Bright steel bars ..	8.0	7.0	5.3	5.0	4.5
Hot-rolled strip ..	24.5	23.1	15.7	19.3	16.5
Cold-rolled strip ..	7.5	7.1	5.2	5.9	4.8
Sheets incl. coated:					
(i) Hot-rolled ..	15.0	13.0	10.8	9.2	8.6
(ii) Cold reduced	24.8	29.1	28.0	27.6	32.1
Tinplate:	15.9	18.8	11.7	18.6	12.9
Blackplate ..	1.3	1.0	0.6	0.8	0.5
Tubes up to 16 in.	26.2‖	22.1	17.6	16.5	15.4
Tube, pipe fittings	0.5	0.5	0.4	0.3	0.3
Tyres, wheels, etc.	4.6	5.1	3.6	3.6	3.2
Forgings (exc. drop)	3.0	3.1	2.6	2.3	2.2
Steel castings ..	4.5	4.6	4.0	3.3	3.1
Tool, and magnet	0.3	0.3	0.2	0.2	0.2
Total	335.0	342.3	283.0	249.8	238.7
Alloy steel	17.3	17.8	13.7	13.2	11.2
Total deliveries from UK production[6] ..	352.3	360.1	296.7	263.0	249.9
Add: Imported finished steel ..	19.5	9.6	11.1	4.6	5.0
Deduct: Intra-industry conversion[7] ..	371.8 55.2	369.7 48.1	307.8 38.2	267.6 32.4	254.9 28.5
Total deliveries new material	316.6	321.6	269.6	235.2	226.4

TABLE 4.—*Production of Pig-iron and Ferro-alloys during August*, 1958.

District.	Furnaces in blast.	Hematite.	Basic.	Foundry.	Forge.	Ferro-alloys.	Total.
Derbys, Leics, Notts, Northants, and Essex ..	19	3.5	17.3	15.9	0.2	—	36.9
Lancashire (excl. N.W. Coast), Denbigh, Flints, and Cheshire ..	7	—	20.7	—	—	1.3	22.0
Yorks (excl. N.E. Coast and Sheffield)							
Lincolnshire ..	9	—	36.2	—	—	—	36.2
North-East Coast	18	3.7	43.7	—	—	0.8	48.2
Scotland	7	0.6	15.3	1.3	—	—	17.2
Staffs, Shropshire, Worcs, and Warwickshire	5	—	5.4	1.4	—	—	6.8
S. Wales and Mon.	11	3.5	44.3	0.2	—	—	48.0
Sheffield	2	—	3.2	—	—	—	3.2
North-West Coast	6	12.4	—	—	—	—	12.4
Total ..	84	23.7	186.1	18.8	0.2	2.1	230.9
August, 1958[4] ..	84	17.6	177.4	22.9	0.2	2.9	221.0
September, 1957	97	28.7	226.6	23.9	0.4	3.1	282.7

[1] Used in non-food manufacturing industries.

[2] Weekly average of calendar month.

[3] Stocks, mainly ingots and sem-finished, at the end of the year and months shown.

[4] Five weeks, all tables.

[5] Other than for conversion into any other form of finished steel listed.

[6] Includes finished steel produced in the UK from imported ingots and semi-finished steel.

[7] Material for conversion into other products also listed in this table.

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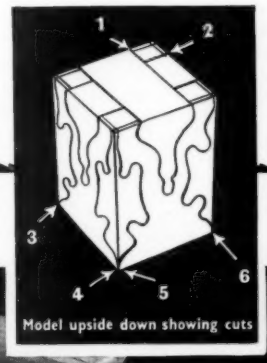

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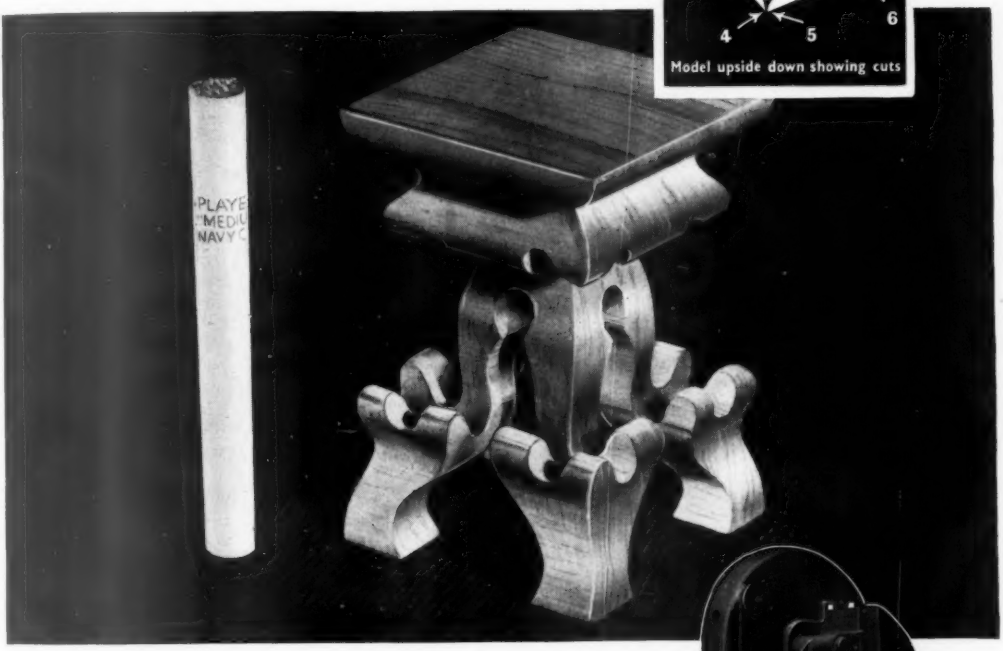

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Raw Material Markets

Iron and Steel

There is little change in the trading position at the ironfoundries, and there is unlikely to be any appreciable change for the remainder of the year, apart from the fact that with the approaching end of their financial year many consumers will take further measures to reduce stocks of both castings and raw materials.

Pig-iron production in all grades keeps ahead of demands, and makers are striving to obtain a more evenly balanced position by increased sales to home and overseas users. In the home market the foundries are taking up all the tonnages they need to fulfil the orders on hand, but are not inclined to keep stocks, while overseas business is difficult to obtain against the low prices quoted by pig-iron producers abroad. Appreciable stocks of all grades of pig-iron are being carried by the furnaces, and these are being added to daily.

Some foundries producing light castings have benefited from the slightly improved demand, and with the removal of further restrictions on building by local authorities, improvement in the demand for builders' castings is hoped for. The light foundries generally need much more work to keep plants fully employed, and this also applies to the jobbing and textile foundries. The demand from all these foundries for high-phosphorus iron, of which plentiful supplies are available, is only moderate.

Consumption of the low-phosphorus irons is maintained at recent levels and there are better outlets for this grade than others. High-duty castings for the motor-car trade, coupled with the requirements for castings from many other users, absorb substantial quantities of this iron, as well as a good tonnage of hematite and some refined irons. Most of the engineering and speciality foundries, however, are not employed at capacity levels.

Chief demand for scrap is for cast-iron and machinery grades; supplies of the better qualities are not so plentiful as other grades. The foundries are well provided with foundry and hard coke, and ganister, limestone, and firebricks can be obtained to requirements.

Ample supplies of steel semis are available for the re-rollers and home steelworks could increase appreciably on present deliveries. Some of the re-rollers in the English Midlands appear to be slightly better employed, but business fluctuates. Home demands for small bars and light sections are insufficient to keep all the mills reasonably employed and there is short-time working at most units. Fairly good demands are made for reinforced rods. For the export market orders are difficult to obtain against severe overseas competition.

Non-ferrous Metals

Although the lowering of the Bank rate by ½ per cent., to 4 per cent. had little immediate impact on non-ferrous metal markets, the action indicates that all possible measures are being taken by the Government to stimulate the economy, which, in the longer run, must prove beneficial alike to consumers and producers of non-ferrous metals.

Copper in London after a short, sharp upward movement at the beginning of last week, settled down later to fluctuate narrowly around £240 a ton. The past few days, however, have witnessed sharp falls and the official price yesterday (Wednesday) was down to under £223. This slump followed two cuts by US customs smelters—by ¼ cent to 29.75 cents per pound on Monday, and by a further ¼ cent on the following day.

The Board of Trade is prepared to offer a further quantity of about 7,500 tons of copper for pricing and delivery before the middle of January, 1959. Of this total, about 3,000 tons of Rhodesian copper will be offered to the original suppliers, and the Board invites offers for the balance on similar terms to those announced for the recent invitation to tender. Inquiries should be made to the Board of Trade, General Division, Lacon House, Theobalds Road, London, W.C.1.

Tin appears to have recovered its balance and is once again moving upwards. This movement has been strong enough to absorb sales of Russian metal and says much for the kind of market activity now being initiated from the United States and from the East. In the US the market is fairly active and the price is around $1.00 a pound.

Lead is quietly steady in London and reasonably firm in the United States. Market activity—apart from routine business—has been generated by the belief that the metal will be involved in some barter deals ere long. In New York, the price is holding firm, at 13 cents a pound, with buying from the automobile industry still in evidence.

Zinc has maintained its position as being slightly dearer than lead in London. This is not so in the United States, where "Prime Western" grades are quoted at 11½ cents., East St. Louis, against lead at 13 cents a pound. In London the market is good with consumers concentrating their attention on nearby supplies. Should this tendency persist, a squeeze on spot supplies and on the cash price may well develop.

Exchanges on Russian and British Steel Research

A small group of Russian scientists, led by Academician Bardin, vice-president of the Soviet Academy of Sciences, are expected to visit this country early in December to study iron and steel research in Great Britain. The tour will last for some ten or 14 days, and will include visits to British Iron and Steel Research Association's laboratories in London, Sheffield, Swansea, and possibly Normanby, together with a number of works visits. The arrangements are being made by BISRA in conjunction with the Iron and Steel Institute. Steps towards closer and more detailed co-operation between Russia and Great Britain were taken when a British team visited the USSR recently to study Soviet research on steel technology and related subjects. This visit arose out of earlier and broader exchanges between iron and steel delegations: after the visits by representatives of the British Iron and Steel Federation in 1955 and 1956 and the return visit by Russian experts in 1956 it was felt that exchanges between more specialized groups would be valuable.

Change of Venue for ISI Autumn Meeting

Owing to the unprecedentedly large number of applications received for the sessions on continuous casting on December 10, which form part of the Iron and Steel Institute's autumn meeting, and also for the 38th meeting of the Engineers Group on vacuum processes, to be held the following day, it has been decided to hold these meetings at Caxton Hall, Caxton Street, London, S.W.1, instead of at the offices of the Institute, as originally arranged. The technical sessions on creep and on hydrogen in weld metal will be held at the Institution of Naval Architects as originally announced.

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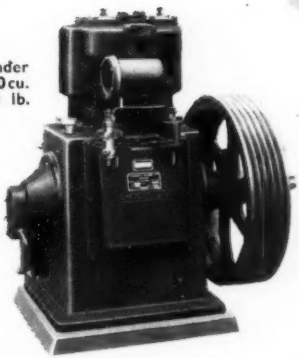
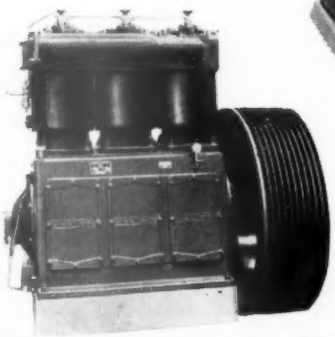


D 23 Twin Cylinder 8½" x 10". 200-220 cu. ft. FAD at 100 lb. per sq. in.



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Current Prices of Iron, Steel, and Non-ferrous Metals

(Delivered unless otherwise stated)

November 26, 1958

PIG-IRON

Foundry Iron.—No. 3 IRON, CLASS 2: Middlesbrough, £21 6s. 0d.; Birmingham, £20 18s. 3d.

Low-phosphorus Iron.—Over 0.10 to 0.75 per cent. P, £23 17s. 0d., delivered Birmingham. Staffordshire blast-furnace low-phosphorus foundry iron (0.10 to 0.50 per cent. P, up to 3 per cent. Si), d/d within 60 miles of Stafford, £24 1s. 3d.

Scotch Iron.—No. 3 foundry, £25 3s. 6d., d/d Grangemouth.

Cylinder and Refined Irons.—North Zone, £25 19s. 0d.; South Zone, £26 1s. 6d.

Refined Malleable.—P, 0.10 per cent. max.: North Zone, £27 6s. 6d.; South Zone, £27 9s. 0d.

Hematite.—Si up to 2 per cent., S. & P. over 0.03 to 0.05 per cent.: N.-E. of England (local iron), £25 6s. 6d.; Scotland (Scotch iron), Zone S.1, £25 13s. 0d.; Sheffield, £26 15s. 0d.; Birmingham, £27 4s. 0d.; Wales (Welsh iron), £25 6s. 6d.

Basic Pig-iron.—£20 3s. 0d., delivered Staffs, Derbyshire, Notts, Lincs, Rutland, Northants, and Leics.

FERRO-ALLOYS

(Per ton unless otherwise stated, delivered)

Ferro-silicon (6-ton lots and over).—45 per cent. Si, £44 0s. 0d. to £44 10s. 0d., scale 15s. 0d. per unit; 75 per cent. Si, £58 0s. 0d. to £62 10s. 0d., scale 16s. 0d. to 17s. 0d. per unit.

Ferro-vanadium.—50/60 per cent., 22s. 6d. per lb. of V.

Ferro-molybdenum.—65/70 per cent., carbon-free, 12s. 6d. per lb. of Mo.

Ferro-titanium.—20/25 per cent., 2-3 per cent. Cu, £250 0s. 0d.; 38/40 per cent., commercially carbon-free, £287 0s. 0d.

Ferro-tungsten.—80/85 per cent., 8s. 3d. per lb. of W.

Tungsten Metal Powder.—98/99 per cent., 11s. 3d. per lb. of W.

Ferro-chrome (6-ton lots and over).—4/6 per cent. C, £83 10s. 0d. to £87 0s. 0d., basis 60 per cent. Cr, scale 30s. 0d. to 30s. 6d., per unit; over 6 per cent. C, £79 10s. 0d. to £85 0s. 0d., basis 60 per cent. Cr, scale 30s. 6d. per unit; 2 per cent. C,* 1s. 8d. to 1s. 11d. per lb. Cr; 1 per cent. C,* 1s. 8½d. to 1s. 11½d. per lb. Cr; 0.15 per cent. C,* 1s. 9½d. to 2s. 0½d. per lb. Cr; 0.10 per cent. C* 1s. 9¾d. to 2s. 0¾d. per lb. Cr; 0.06 per cent. C,* 1s. 10d. to 2s. 1d. per lb. Cr.

Metallic Chromium.—98/99 per cent., 6s. 10d. per lb.

Metallic Manganese.—94/96 per cent., carbon-free, £265 0s. 0d.; 96/98 per cent., £295 0s. 0d.

Ferro-columbium.—65/72 per cent., Nb + Ta, 19s. 9d. per lb., Nb + Ta.

Ferro-manganese (home).—78 per cent., £73 0s. 0d.

SEMI-FINISHED STEEL

Re-rolling Billets, Blooms, and Slabs.—BASIC: Soft u.t., £32 15s. 6d.; tested, 0.08 to 0.33 per cent. C, £33 15s. 6d.; hard (0.41 to 0.60 per cent. C), £34 17s. 0d.; silico-manganese, £43 16s. 6d.; free-cutting, £36 14s. 6d. SIEMENS MARTIN ACID: Up to 0.25 per cent. C, £41 1s. 0d.; silico-manganese, £44 4s. 0d.

* Average 68-70 per cent.

Billets, Blooms, and Slabs for Forging and Stamping.—Basic, soft, up to 0.33 per cent. C, £38 10s. 0d.; basic, hard, over 0.41 up to 0.60 per cent. C, £39 12s. 6d.; acid, up to 0.25 per cent. C, £43 4s. 0d.

FINISHED STEEL

Heavy Plates and Sections.—Ship plates (N.-E. Coast), £42 2s. 0d.; boiler plates (N.-E. Coast), £44 12s. 0d.; floor plates (N.-E. Coast), £43 11s. 0d.; angles (N.-E. Coast), £39 16s. 6d.; joists (N.-E. Coast), £39 12s. 6d.

Small Bars, Sheets, etc.—Rounds and squares, under 3 in., and flats 5 in. wide and under, untested soft basic, 50 tons and over, £40 0s. 6d.; under 10 tons to 4 tons, £40 18s. 0d.; under 4 tons to 2 tons, £41 3s. 0d.; hoop and strip, coils, £39 0s. 0d.; uncoated strip mill coils, hot rolled, under 3mm. to 12g., £44 16s. 0d.; black sheets (hand mill), 24g., £58 14s. 6d.; galvanized corrugated sheets, 24g., £66 16s. 0d.

Alloy Steel Bars.—1 in. dia. and up: Nickel, £68 10s. 0d.; nickel-chrome, £99 11s. 0d.; nickel-chrome-molybdenum, £111 19s. 0d.

NON-FERROUS METALS

Copper.—Cash, £222 15s. 0d. to £223 0s. 0d.; three months, £223 10s. 0d. to £224 0s. 0d.; settlement, £223 0s. 0d.

Copper Tubes, etc.—Solid-drawn tubes, 2s. 3⅛d. per lb.; rods, 250s. 6d. per cwt. basis; 20 s.w.g., 285s. 6d. per cwt.

Tin.—Cash, £758 10s. 0d. to £759 10s. 0d.; three months, £761 0s. 0d. to £761 10s. 0d.; settlement, £759 10s. 0d.

Lead (Refined Pig).—Second half November, £73 12s. 6d. to £73 15s. 0d.; second half February, £73 15s. 0d. to £74 0s. 0d.

Zinc.—Second half November, £75 5s. 0d. to £75 7s. 6d.; second half February, £72 7s. 6d. to £72 10s. 0d.

Zinc Sheets, etc.—Sheets, 15g. and thicker, all English destinations, £109 15s. 0d.; rolled zinc (boiler plates), all English destinations, £107 10s. 0d.; zinc oxide (Red Seal), d/d buyers' premises, £95 10s. 0d.

Brass Tubes, etc.—Solid-drawn tubes, 1s. 10⅝d. per lb.; sheets to 10 w.g., 198s. 6d. per cwt.; wire, 2s. 7⅞d.; rolled metal, 198s. 6d. per cwt.

Brass (Brazing).—BS1400, B3 (65/35), £160; B6 (85/15), £206; BS249, —.

Brass (High Tensile).—BS1400, HTB1 (30 tons), £186; HTB2 (38 tons), £207; HTB3 (48 tons), —.

Gunmetal.—BS1400, LG2 (85/5/5/5), £185; LG3 (86/7/5/2), £199; G1 (88/10/2/½), £259; (88/10/2/1), £253.

Phosphor Bronze.—BS1400, PB1 (AID released), £283 per ton.

Leaded Phosphor Bronze.—BS1400, LPB1 (1060), £215 per ton.

Phosphor Bronze Strip, etc.—Strip, 288s. 3d. per cwt.; wire, 4s. 1½d. per lb.; rods, 3s. 4d.; tubes, 3s. 4d.; chill cast bars: solids 3s. 3½d., cored 3s. 4½d. (CHARLES CLIFFORD, LIMITED.)

Nickel Silver, etc.—Rolled metal, 3 in. to 9 in. wide × 0.056, 3s. 9d. per lb.; round wire, 10g. in coils (10 per cent.), 4s. 2d.; special quality turning rod, 10 per cent., ½ in. dia., in straight lengths, 4s. 1d. All prices are net.

Other Metals.—Magnesium, ingots, 2s. 5½d. per lb. Antimony, English, 99 per cent., £190 0s. 0d. Quicksilver, ex-warehouse, £74 0s. 0d. Nickel, £600 0s. 0d. Aluminium ingots, £180 0s. 0d.; aluminium bronze (BS1400), AB1, £228; AB2, £240.

New Pension Scheme

The Pressed Steel Company has announced an entirely new retirement pension scheme for its factory workers and improved pensions benefits for its office staff. From now onwards, all its factory workers will be entitled to substantial free life insurance during their employment, and to free, non-contributory pensions on normal retirement after 10 years' service, as part of their regular terms of engagement. There will also be special benefits for the widows or dependants of any employee dying shortly after retirement.

Rate of pension for factory workers will be decided by years of continuous service with the company up to 30 years. A factory worker for instance will normally be entitled to 1s. a week for every year of continuous service, provided he has served at least ten continuous years when he is 65. Every adult works employee under 65, who has roughly a year's service to his credit, will qualify for free life insurance on a scale beginning at £250 and rising to £500.

Members of the staff pension fund, which is already in existence, will also receive larger free life insurance, and will henceforth pay smaller contributions towards their pensions. These contributions will be on favourable terms, the company paying the greater part of the cost. Both factory workers and staff will; if they wish, be able to make voluntary contributions, which will secure for them higher pensions or additional endowment assurance on very favourable terms.

Mr. V. R. PREHN has been appointed deputy managing director and Mr. E. R. JONES and Mr. C. T. ALDERSON have been appointed assistant managing directors of Ruston and Hornsby, Limited.

Obituary

Professor ARCHIBALD PREECE, head of the Department of Metallurgy at King's College, Newcastle, died on November 13, at the age of 53.

The death has occurred, at the age of 55, of Mr. WILLIAM L. GRIMSHAW, works manager at British Northrop, Limited, Blackburn, for the past 11 years and a director for two years.

The death occurred on November 18, at the age of 42, of Mr. CHARLES DONALD RUSHWORTH, a director of Rushworth & Company (Sowerby Bridge), Limited, engineers, Sowerby Bridge (Yorks).

The American Press reports the death of Mr. VICTOR A. CROSBY, who for many years was associated with the Climax Molybdenum Company, as metallurgist, and had an international reputation.

Mr. LUTHER GRIFFITHS, a former chief engineer of the steel division of the Steel Company of Wales, Limited, died recently. He was largely responsible for the reconstruction of the company's Margam Works.

Mr. FRANK RUTLAND STAGG, deputy chairman of Thos. Ward, Limited, Sheffield, has died at the age of 77. He had been associated with the firm since 1895. Mr. Stagg was also a director of several subsidiary and associated companies of the Ward group.

The death occurred last month, at the age of 83, of Mr. DAVID HAIGH, chairman of directors of John Haigh & Sons, Limited, Priestroyd Ironworks, Huddersfield. He was a grandson of Mr. John Haigh, who founded the firm in 1835, and took over as chairman on the death of his father, Mr. Phineas Haigh in 1931.

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CLASSIFIED ADVERTISEMENTS

PREPAID RATES: Fifteen words for 7/6 (minimum charge) and 4d. per word thereafter. Box Numbers 2/6 extra (including postage of replies). Situations wanted 2d. per word throughout.

Advertisements (accompanied by a remittance) and replies to Box Numbers should be addressed to the Advertisement Manager, Foundry Trade Journal, John Adam House 17/19, John Adam Street, Adelphi, London, W.C.2. If received by first post Monday advertisements can normally be accommodated in the following Thursday's issue.

SITUATIONS WANTED

PATTERNMAKER (36) with 15 years' foundry experience, seeks position with prospects of advancement.—Box PT344, FOUNDRY TRADE JOURNAL.

FOUNDRY SUPERINTENDENT desires situation. Steel up to 18 tons, Iron up to 5 tons. Jobbing and fully mechanised plants. Training of unskilled male and female labour all depts. A.F.S., A.M.I.B.F. Box FS340, FOUNDRY TRADE JOURNAL.

FOUNDRY TECHNOLOGIST, Draughtsman, Metallurgist, Estimator, Engineer, and Moulder. Loam, dry and green sand, also CO_2. Jobbing and mech. Metals, steel, iron, and non-ferrous. Able to quote from prints for production and costs. Box FT330, FOUNDRY TRADE JOURNAL.

A YOUNG FOUNDRY MANAGER, 35, seeks position as Manager or Assistant, preferably in Scotland. City and Guilds Certificate in Foundry Practice. Practically and technically trained, experienced jobbing or machine work for castings in high duty or grey iron up to 15 tons. Box AY327, FOUNDRY TRADE JOURNAL.

SITUATIONS VACANT

METALLURGIST or FOUNDRY TECHNICIAN required to take over technical control in light alloy foundry. Applicant must have had practical foundry experience in the manufacture of high strength aluminium alloy castings to aircraft standards.

The post is permanent and offers good prospects in a steadily expanding business. Applications stating age, experience and salary required to: MANAGING DIRECTOR, Brytallium Castings (Bolton), Ltd., Prospect Foundry, Smithills, Bolton, Lancs.

THE COPPER DEVELOPMENT ASSOCIATION

REQUIRES the services of a METALLURGIST to deal with technical enquiries. The appointment offers opportunities for a keen man to make himself thoroughly conversant with the metallurgical aspects of the copper industry. A Degree and some practical experience in the casting and fabrication of copper and copper alloys, with a knowledge of their applications, are desirable. Commencing salary according to qualifications and experience, but not less than £900 per annum. A generous non-contributory pension scheme is in operation. Applications (marked confidential) should be sent to the SECRETARY, at 55, South Audley Street, London, W.1.

SITUATIONS VACANT—*contd.*

ALUMINIUM GRAVITY DIE CASTING FOUNDRY

MANCHESTER Area, requires FOUNDRY MANAGER; fullest particulars please to Box AG342, FOUNDRY TRADE JOURNAL.

FOUNDRY FOREMAN required by West Midlands Jobbing Foundry producing Castings up to 15 tons in weight. Must have modern approach and experience of Sand Slinger; also Loam, Dry and Green Sand and CO_2. Apply Box FF348, FOUNDRY TRADE JOURNAL.

QUALCAST (Ealing Park) Limited, Junction Road, South Ealing, have a vacancy for a full time SALES REPRESENTATIVE. Applicants must have had previous experience in the sale of High Duty Iron Castings, and should apply in writing, giving age, experience, and salary required.

EXPERIENCED FOUNDRY MANAGER required by West Midlands Jobbing Foundry producing castings up to 25 tons in weight. Applicants must have the ability to improve present production methods and capable of increasing present output. Apply Box EF349, FOUNDRY TRADE JOURNAL.

FOUNDRY FOREMAN required by modern non-ferrous gravity die foundry. Experienced man with ability to take responsibility and handle labour essential. Good working conditions, excellent pension scheme. Replies treated in strict confidence. Apply: ENGINEERING & LIGHTING EQUIPMENT CO., LTD., Sphere Works, Campfield Road, St. Albans.

LIGHT ALLOY Diecasting Foundry in the London area require a man with drive and ambition for a works executive position. Qualifications include sound practical experience of gravity and pressure work also die design. The position offers scope in an expanding organisation. State full particulars in strict confidence and salary expected. Box LA343, FOUNDRY TRADE JOURNAL.

FOUNDRY MANAGER required to take charge of Machine Moulding, Chill Casting, Centrifugal Core Shops, in medium sized Non-ferrous Foundry in South Midlands (30 miles London). Must be good disciplinarian and have had extensive experience in above operations. Good salary and prospects offered to right applicant. Reply giving details of experience in chronological order to Box FM338, FOUNDRY TRADE JOURNAL.

SITUATIONS VACANT—*contd.*

METALLURGICAL CHEMIST (male or female) required by Engineering firm in Manchester area. Applicants should have previous Foundry experience and be capable of dealing with routine analyses. State age, experience and salary required. Box MC345, FOUNDRY TRADE JOURNAL.

SENIOR DRAUGHTSMAN required by foundry plant manufacturers for mechanised cupola melting plants. Mechanical handling and/or structural experience desirable. Excellent prospects in a progressive Division. Please address all details in confidence to the PERSONNEL MANAGER, THE INCANDESCENT HEAT CO. LTD., Cornwall Road, Smethwick.

PARACAST PROCESS—Young (25/35) Foundry Engineer or Technologist required as SUPERINTENDENT of Special Process Section of the steel and non-ferrous foundries of A.P.V./PARAMOUNT, LTD., Crawley, Sussex. Practical background, organising ability and drive essential. Applications to the PERSONNEL MANAGER.

EXPERIENCED FOREMAN required by Light Casting Foundry in the London area. Must be enthusiastic Foundryman, with drive and initiative, willing to accept responsibility for production of iron and non-ferrous castings up to 20 cwts. in green-sand and CO_2. Experience in semi-mechanical production an advantage. Details of age, experience and salary. Box EF346, FOUNDRY TRADE JOURNAL.

MANAGER required for non-ferrous Foundry. Pattern Shop, Sand, Gravity Die and Shell moulding. Modern equipment. Twenty miles north of London. At least five years' similar experience essential. Good salary, pension scheme, prospects for suitable applicant. Write in confidence, giving age, experience and salary required, to: ENGINEERING & LIGHTING EQUIPMENT CO., LTD., Sphere Works, Campfield Road, St. Albans.

FOREMAN for non-ferrous foundry, to control core making, moulding and fettling—4 to 6 tons per week. Expert knowledge and supervision of non-ferrous work essential.

FOREMAN for Iron Foundry covering mechanised, sand slinger and loose pattern work, including pump casings, cylinder heads and similar work. Previous supervisory experience of this type of work.

These posts call for men of between 35 and 50. Present staff know of these vacancies which result from continued expansion.

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Full details, in confidence, of age, qualifications and experience (stating if you prefer London or Poole for preliminary interview) to PERSONNEL OFFICER, Hamworthy Engineering Ltd., Poole, Dorset.